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## THE WILSON BULLETIN

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## THE WILSON ORNITHOLOGICAL CLUB

Founded December 3, 1888. Named after Alexander Wilson, the first American ornithologist, and called the "Father of American Ornithology."

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The Iowa Ornithologists' Union.
The Kentucky Ornithological Society.
The Tennessee Ornithological Society.

# THE WILSON BULLETIN

A QUARTERLY MAGAZINE OF ORNITHOLOGY
Published by the Wilson Ornithological Club

Vol. XLII DECEMBER, 1930 No. 4

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## THE BARRO COLORADO LABORATORY AS A STATION FOR ORNITHOLOGICAL RESEARCH

BY JOSSELYN VAN TYNE

In view of the increasing interest now being shown by American ornithologists in detailed studies of the life histories of birds it seems desirable to call attention to the tremendous opportunity for such work on neotropical species and the splendid facilities for field studies now afforded by the Barro Colorado Biological Station in the Panama Canal Zone.

Perhaps few realize how little is known of tropical American birds. Their taxonomy is now fairly well understood, but, I suppose, less is known of their habits than was known of North American birds in the days of Audubon's explorations ninety years ago. This situation is due to the real and fancied dangers and difficulties usually attendant upon field work in the tropics. But with the establishment of the Barro Colorado laboratory in 1924 these were largely eliminated from work in that region.

When the great Gatun Lake was formed in the construction of the Panama Canal there were created a number of islands. Barro Colorado, the largest of these islands, fortunately escaped the devastating hand of the ubiquitous banana planter until 1923 when Governor Morrow wisely insured its permanent preservation by proclaiming it a Natural Park. Soon afterward, through the intervention of Dr. Thomas Barbour, James Zetek, and others, the island was assigned for scientific purposes to the Institute for Research in Tropical America which founded there the Barro Colorado Island Biological Station.

Barro Colorado Island is about three and a half miles long and three miles wide and rises at its highest point about 450 feet above the average level of Gatun Lake. Much of the island, especially on the side on which the Laboratory is located, is very rugged. Many rocky brooks have cut well back into the steep hillsides, forming an intricate system of deep ravines and high ridges. The central and western part of the island, however, is more level and slopes gently down to the lake shore. Except for the clearing immediately about the laboratory

buildings and the small clearing of an old plantation on the other side of the island, a tropical forest covers the whole area. A large part of the forest is characterized by very large trees and is without question a virgin growth. Oven seventeen miles of carefully planned trails make every part of this forest reasonably accessible from the Laboratory, which is beautifully situated high above the lake on the east shore of the island. In the sheltered cove below the Laboratory

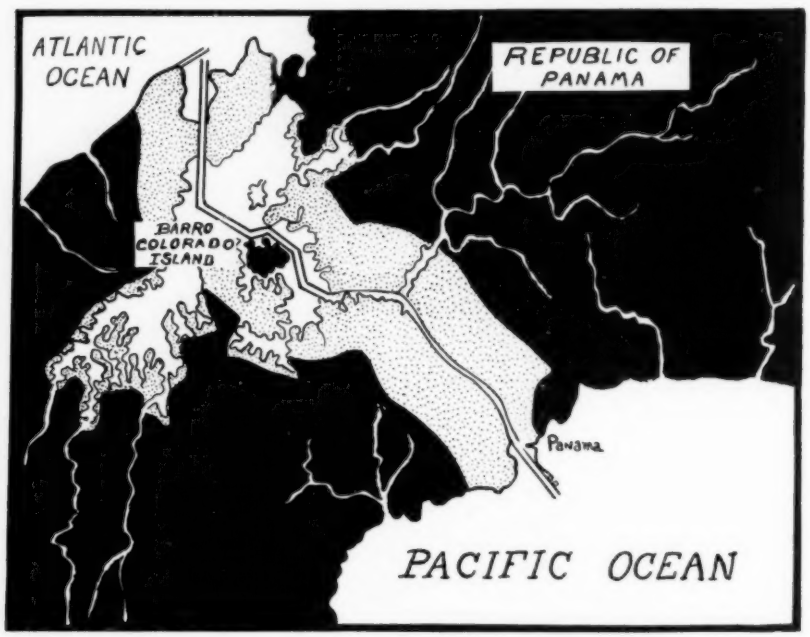


FIGURE 1. Sketch Map of the Canal Zone, Panama, showing Gatun Lake and Barro Colorado Island. Reproduced from the *Scientific Monthly* for May, 1930, by permission from this magazine and the author, Dr. S. W. Frost.

is the dock where visitors and their baggage are landed by the Laboratory launch which brings them from the little railroad station of Frijoles, three miles away across the Canal. Frijoles is almost the midpoint on the Panama Railroad and three trains a day in each direction make all other points in the Canal Zone very easy to reach from the Laboratory.

At the Laboratory the scientist is provided with good board, comfortable sleeping quarters, and a large, well-screened laboratory with spacious tables for any sort of work. There is also at his disposal a good supply of pure water, ice, a dark room, drying closet, and many of the more common chemical reagents and supplies.

FIGURE 2. The laboratory buildings of the Barro Colorado Island Biological Station. (Photo by Walter E. Hastings).

FIGURE 3. Gatun Lake and the Panama Canal as seen from the laboratory. (Photo by Walter E. Hastings).

It is easy to accept such conditions as a matter of course, but the student should realize that they are quite unique. I know of no other place in the American tropics where the biologist can live and work in comfort and safety in a virgin rain-forest jungle.

But I shall not attempt here to describe in detail the facilities of the Laboratory or the environmental conditions in the Panama forest but simply refer the reader to Dr. Gross' (1927) article in the Smithsonian Report and to Dr. Chapman's delightful book (1929) on Barro Colorado. I have personally spent eleven months at the Laboratory and will gladly answer to the best of my ability any inquiries addressed to me concerning Barro Colorado. Those who plan to work at the Laboratory should apply to Dr. Thomas Barbour (Museum of Comparative Zoology, Cambridge, Mass.).

My purpose here is to outline some of the problems awaiting the ornithologist in Panama and to make a few suggestions as to how they may be attacked.

The problem of seasons in Panama is an altogether different one from that which confronts the ornithologist in the North. There is no winter and summer, but instead, a wet season from June to December and a dry season during the other five or six months. But there are usually ten or fifteen inches of rain on Barro Colorado during the dry season, so that it is really a rain forest, although showing a marked tendency toward the monsoon type. The study of the correlation of the nesting time of the various birds with the wet and dry seasons is a most interesting one. We have made only a bare beginning, but apparently some species nest only in the dry season (*Ramphastos*, *Brotogeris*, and *Zarhynchus*) and others only in the wet season (*Myiobius* and *Manacus*) while still others (*Ionornis* and *Leptotila*) seem to nest throughout the year. Studies made there by Dr. Chapman (1928) have already indicated a remarkable exactness in the annual commencement of breeding operations by certain species. As to the factors which govern this we can not as yet even make an intelligent guess.

I ought, perhaps, to mention at this point that no one should hesitate to visit Barro Colorado during the rainy season. Field work in the tropics is customarily discontinued at the beginning of the wet season. But this is ordinarily due to the difficulty of transport and of drying specimens. Neither of these factors need be considered on Barro Colorado. The heavy rainfall comes mainly in short, hard showers in the afternoon and interferes very little with one's work. And the fact that the abundant ticks of the dry season disappear almost entirely with the commencement of the rains is no small argument for

FIGURE 4. The Kingbird (*Tyrannus melancholicus chloronotus*) which nests abundantly in March on Barro Colorado. (Photo by Walter E. Hastings).

FIGURE 5. The nest of a small Flycatcher (*Myiozetetes similis columbianus*) on Barro Colorado. Many birds in Panama build covered nests. (Photo March 17, 1926, by J. Van Tyne).

choosing the wet season. I have worked on the Island during two wet and two dry seasons and I feel that the advantages and disadvantages of the two seasons so exactly balance that I shall time my next visit to the Laboratory solely according to the nesting time (known or guessed) of the species I wish to study.

Other problems are those concerned with the determination of the methods and conditions of breeding peculiar to the tropics. It has long been known that birds lay fewer eggs in the tropics. We found that the Purple Gallinule on Barro Colorado lays but three to four eggs to a set, whereas in the temperate regions to the north the same species lays six to eight. Two eggs was usually the full complement in nests of small perching birds which we found in Panama. In the United States four eggs may be considered the average set for small land birds. In addition our work at Barro Colorado has already shown that in most species studied the period of incubation is surprisingly long. In the case of two Tyrant Flycatchers (*Myiobius a. atricaudus* and *Pipromorpha oleaginea parca*) we found an incubation period of twenty-one and twenty-two days, half again as long as known for any species of the family in temperate regions. The period of nestling life we found equally prolonged.

Life history studies at Barro Colorado will be of two types. Birds of genera or families also found in temperate regions will be studied with the hope that valuable facts may result from a comparison with their northern representatives. And even more interesting results may be expected from studies made of species belonging to exclusively neotropical groups. Of the first type the flycatchers are, perhaps, the best example, but there are many others, such as gallinules, herons, tanagers, and orioles. Of the second type may be mentioned the toucans, antbirds, woodhewers, manakins, and puffbirds.

Most of the supposed difficulties in the way of such work on Barro Colorado do not exist or are readily overcome, but there are certain obstacles against which the ornithologist should be fore-warned if he is to avoid disappointment. Although the avifauna of tropical America is extremely rich in species (from Panama alone there are already recorded over a thousand forms) yet the individuals are not correspondingly abundant. This is a rather serious handicap to life history studies because of the difficulty of finding sufficient material on a single species. But with time, industry, and a little luck even this problem may be solved. Another obstacle we encountered was the high percentage of nests under observation which were destroyed by enemies before the eggs had hatched or the young had left. The per-

FIGURE 6. The nest of the Cassin Dove (*Leptotila cassini*) may be found both in the wet and the dry seasons. Photo, Barro Colorado, March 19, 1927, by Walter E. Hastings).

FIGURE 7. A Turkey Buzzard photographed from the porch of the laboratory. (Photo by J. Van Tyne, March, 1927).

centage was perhaps not much greater than in the north but it was high enough to present a serious problem. An additional difficulty in the way of the newcomer is that of the identification of the birds seen and studied. But this has been largely overcome at Barro Colorado. There is now an excellent illustrated handbook of the birds of this very region (Sturgis, 1928), the *only* book of its sort for the whole American tropics, and there is at the Laboratory a set of identified study skins of most of the species of birds recorded from the Island. Nevertheless, no serious student should expect to work on Barro Colorado without collecting an occasional bird as a final check upon his identifications.

I have mentioned but a few of the problems which have come to my attention in the course of my early work in Panama but they are perhaps sufficient to indicate the wealth of fascinating questions which now await solution in the forests of Barro Colorado.

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# NOTES ON THE WILD TURKEY IN INDIANA

BY S. E. PERKINS III

Thanksgiving time is approaching. It usually brings to mind the subject of turkey, so it has occurred to me that it might be of some interest to record the observations of travelers in Indiana in earlier days on the status of the Wild Turkey. This bird was a more highly colored one than the farm yard variety, with much more of the bronze and copper reflections in its plumage. It fed largely on nuts and wild fruits and its flesh was tender and delicious.

I naturally turn to reports of travelers in the pocket of the State. Vincennes, located there, was the earliest outpost in lower Indiana, variously reported as having been founded in 1702 and 1735. During the period from 1765 until almost the middle of the next century it was the objective of many native and foreign travelers, most of whom were in search of scientific data.

Then, too, Harmony, later New Harmony, fifty miles farther down the Wabash River, established in 1815 by the Rappites, who were succeeded in 1825 by Robert Dale Owen and his Communistic band, was the terminus for journeys of many and the temporary abode of other travelers going farther west, for more than twenty years. The members of the famous Boatload of Knowledge lived there. Among the scientists known in this country and abroad, who gathered at New Harmony, were Thomas Say, naturalist and conchologist; Chas. A. Sueur, artist, an intimate friend of the noted ornithologist, Cuvier; Constantine Rafinesque, botanist; and Dr. Girard Troost. It was to be expected that the most frequent reports of observations of scientific and popular facts would pertain to that part of Indiana. There are many records thoroughly reliable and by men accustomed to writing of their observations.

Col. Geo. R. Croghen, in June, 1765, with a small party crossed from Cincinnati to Vincennes (called by him Port Vincent) on a mission to distribute gifts for the Government to the Indian tribes. He reports, "the ground near here (Port Vincent) is well watered and full of buffalo, deer, bears and all kinds of wild game."

John J. Audubon, the celebrated bird painter, lived at Henderson, Kentucky, opposite Evansville, from 1810 for the period of eight years. He left a diary of his doings. His notes are to the effect that the Wild Turkey was exceedingly abundant in that part of Southern Indiana where he collected.

Then came in 1816, David Thomas, a florist and pomologist, who had few equals along these lines in the United States at that time, on

a visit to lower Indiana, who says, "wild turkeys abound in this country".

Wm. Corbett, an English soldier, spent some time in Indiana, especially at Princeton, Evansville, and Harmony in 1818, and has left us in his diary the following sentences: "Saw on June 23, 1818, large quantities of wild turkeys and thousands of passenger pigeons." Again, "On our way to Princeton we saw large flocks of fine wild turkeys and whole herds of pigs, apparently very fat. Some of the inhabitants, who prefer sport to work, live by shooting these wild turkeys."

Three years later David B. Warden, French-Irish author and antiquarian, says "of the feathered race of game, wild turkeys and pigeons swarmed in the woods".

Wm. N. Blaney reports during 1822 that "two young hunters in two days' hunt in southern Indiana brought back a great number of turkeys, 16 deer and 2 bears".

Timothy Flint, in his "History of the Mississippi Valley", records that in 1826 he found Wild Turkeys and pigeons numerous throughout southern Indiana.

Maximillian, Prince of Wied, made extensive travels through North America and prepared several volumes of the scientific data acquired. He spent the winter of 1832-1833 at New Harmony and the vicinity where he writes as follows: "The most interesting of the birds of this part is the wild turkey which was formerly extremely numerous and is still pretty common". "A large cock was sold at Harmony for a quarter of a dollar. A young man in the neighborhood who supplied the place with this delicate game, had often 10 or 15 hanging about his horse at the same time". "In our excursions we often visited some others of the numerous islands in the Wabash, being particularly attracted there by the loud cries of the wild turkey". "Turkey Island seemed to be a favorite place of resort where we often found wild turkeys and even the Virginian deer and it is really a fine sight to see flocks of these wild turkeys flying across the river". "We generally return home with ducks and other birds but we are unsuccessful in our chase of the wild turkeys, of which we sometimes saw whole flocks flying across the Wabash". This is the first reference to the growing scarcity of this noble bird. Note that from "extremely numerous" this bird has been reduced by 1832 to "pretty common".

Dr. E. W. Nelson of the Biological Survey, from his study of the birds of this region, in 1875 found the Wild Turkey common in the bottoms.

Dr. A. W. Brayton of Indianapolis, reports the last one found within Marion County was in 1879.

Robert Ridgway, writing of the Wild Turkey near Wheaton, Knox County, in 1881, says of it in that limited area, "Common, scarcely a day but what one or more were seen and on one occasion a flock of 14 was met with. When surprised they fly into the swamp, where, alighting on the trees, they are secure from pursuit. The inhabitants pay no attention whatever to the game laws, and it is owing entirely to the safe retreat afforded by the swamp that the turkeys have not been more nearly exterminated". In the 80's then, the bird is not found except in the bottoms and swamps, the places of most difficult access for hunters.

Mr. James P. Baker of Indianapolis, recalls that as the turkeys became scarcer they roosted higher, even to the highest branches of trees.

Its status in the late 80's was such that, as a species, it could have been increased. However, there was still that feeling among farmers that everything wild belonged solely to the local owners and any attempt to legislate and enforce legislation for the benefit of the State was an infringement on purely personal rights and little progress for protection to our vanishing wild life was accomplished.

Dr. Amos W. Butler gives as the last dates of these birds reported to him, from Knox County, 1894; from Gibson County, 1897, at which dates they were to be found only in limited numbers in Posey County, their last stand, the corner County of the State. Since the 90's they have gradually become scarcer and scarcer until now they are pretty generally considered to be entirely extinct within our borders, except for the nucleus recently released on the Brown County Reservation by the State Conservation Department and the few in privately owned game farms.

Thirty-eight young birds, raised from wild North Dakota stock, in captivity, have been released during the last two seasons. What a pity that we are having to introduce to our State a species of bird which, if conservative methods for its use had been adhered to in the past quarter century, we would have obviated the necessity for steps to be taken for its re-introduction. This should be a lesson to us as we think on other species whose future existence is in the balance.

INDIANAPOLIS, INDIANA.

# LARINE SUCCESSION ON LONE TREE ISLAND

BY C. G. MANUEL

At this island in Saginaw Bay, Michigan, there occurs an interesting succession of fish-eating birds from early spring until late in summer. The birds are the Common, Black, and Caspian Terns, and also Bonaparte's Gulls.

Just a few days after the ice melts, the first migrants, the Bonaparte's Gulls, gradually appear. After a few days' feeding in deeper water (six feet approximately) they move northward. Almost immediately they are replaced by the Common Terns, which begin to arrive about the first week of May. Although the Black Terns also arrive at about the same time, the latter establish themselves and nest in the marshes just showing up along the shores. The Common Terns increase in number until the second week in June when they are most numerous, as there are usually at least 2000 pairs of birds in the colony. At this period, a few Herring Gulls and Caspian Terns may be seen at certain uninhabited points on the island. Apparently these Caspian Terns drop out of the flock as they pass the island on their northern migration. Perhaps the easy accessibility of small perch induces the birds to stay as evidenced by the number of these dead fish, about four inches, that may be seen floating nearby. Those that were recovered from the stomach of the Caspian Tern are of this size. A few Caspian Terns that were examined were all sexually immature and it may be assumed that the fact they are not ready to breed eliminates the necessity of their going north to the regular breeding areas. On very rare occasions, Black Terns can be seen in the island before the first week of August. Beginning with the second week, however, their presence becomes very conspicuous. They congregate in certain definite spots at the island and feed gregariously nearby. The lowering of the temperature which sends the minnows in deeper water probably accounts for their movement from the shore to the island. Almost simultaneously, a few young Bonaparte's Gulls arrive, presumably the immature ones that stay all summer in certain parts of Saginaw Bay.

While the young of four species are coming to the island, the adult Common Terns are fast leaving, so that there is a time when the island is inhabited almost entirely by young birds. The young Common Terns are then able to hunt food for themselves, but perhaps could not endure long distance flight—thus later departure may be explained.

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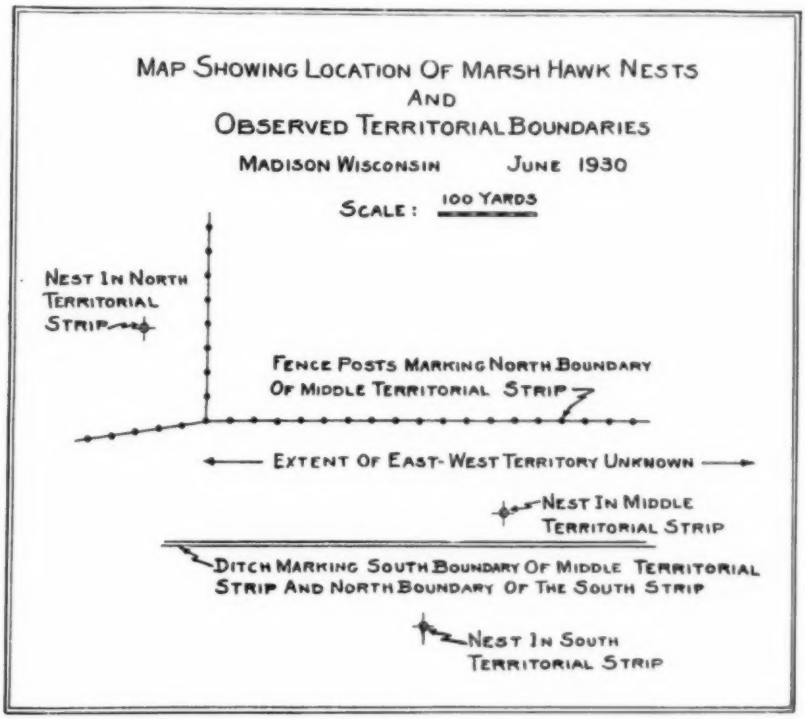
# TERRITORY DISPUTES OF THREE PAIRS OF NESTING MARSH HAWKS

BY PAUL L. ERRINGTON

Early in June, 1930, three Marsh Hawk nests were located for study in a small portion of a drained marsh near the State Fish Hatchery, Madison, Wisconsin. The marshy land, upon which the studies were conducted, was largely uncultivated, grown up to golden-rod, nettles, etc., and roughly a square mile in area. The east end


MAP SHOWING LOCATION OF MARSH HAWK NESTS
AND
OBSERVED TERRITORIAL BOUNDARIES
MADISON WISCONSIN JUNE 1930
SCALE: 100 YARDS
NEST IN NORTH TERRITORIAL STRIP
FENCE POSTS MARKING NORTH BOUNDARY OF MIDDLE TERRITORIAL STRIP
EXTENT OF EAST-WEST TERRITORY UNKNOWN
NEST IN MIDDLE TERRITORIAL STRIP
DITCH MARKING SOUTH BOUNDARY OF MIDDLE TERRITORIAL STRIP AND NORTH BOUNDARY OF THE SOUTH STRIP
NEST IN SOUTH TERRITORIAL STRIP

of this tract was occupied by only one pair of Marsh Hawks; the west end by the three pairs to be discussed.

The nests were situated in three approximately parallel strips of territory, and with regard to each other somewhat as the points of an isosceles triangle. The nest representing the apex of the triangle was about 400 yards from those at the base, which latter were about 130 yards apart. No explanation is offered as to why the three pairs of hawks nested so closely together; they had ample space for spreading out farther, had they wanted to.

As might be expected, the occupants of the middle territorial strip were frequently involved in disputes with one neighbor or the other, especially in the forepart of the nesting season. The middle strip, 120 yards in width, apparently was not restricted to any particular length, but was bounded on the south by a drainage ditch and on the north by a wire fence. All of the nesting hawks seemed to accept these man-made landmarks, at least for a considerable distance, as the proper bounds of their adjacent territories. The ditch was neutral ground, which the rival birds would not ordinarily approach nearer than 30 to 50 feet. The fence posts to the north were recognized as the inviolable feeding and lookout perches of the middle pair.

The greatest strife was noted during the incubation and hatching period, when the returning prey-laden male of the middle pair would cut across the territory on the south. Such trespass would not meet with the approval of the south pair and they would shortly point out to the offender the magnitude of his error, often to the extent of persuading him to leave the way he arrived, thus compelling him to make a pronounced detour to his own nest. The incubating female of the middle strip would join her mate if the trespass was committed by the other parties. On one occasion, before the ditch and the fence were respected as territorial borders, the entire population of six hawks was observed in the air, engaged in simultaneous argument as to who was who and why.

Intra-specific raptorial relations grew more amicable as the summer progressed. The birds of the middle territory learned to enter their strip from the end, thereby sparing themselves no small amount of grief. Virtually the only subsequent unpleasantness came about on account of the detested man-creature, who appeared every day or so to squeeze the ground-squirrels from the gullets of the nestlings. The female resented the most this maltreating of the offspring, and a person had to be quick on the dodge to keep her talons out of his hair.

Even an object of special hatred like a meddlesome human visitor seldom caused the parent birds to forget the ditch and fence. To the ditch or to the fence they would attend the invader, but there the pursuit would cease. If the female Marsh Hawk from south of the ditch would follow across, she would be embarrassed by the female from the north side.

Less parental jealousy was witnessed between the pairs as the young attained their growth and power of flight, however vicious the adults became toward the investigator. No animosity was shown the heavy-flying juveniles by adults, although it is presumed that the

youngsters attached no unusual significance to the ditch or to the fence. For a few days after they had left the grass and weeds in late July, buffy juveniles were seen sitting on posts throughout the whole west half of the marsh; territorial intolerance plainly did not persist this long in the season.

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## SEASONAL CHANGES IN A BIRD HABITAT IN TEXAS

BY G. EIFRIG

During thirty years of bird observation I have seen many and profound changes taking place in the country as a whole as well as in local, circumscribed bird-habitats. Many of these were unavoidable, such as the clearing of forests to be made into farms, which has been going on ever since the first settlement of the country. Some of these changes are violent and disastrous to bird and animal life in general, and many are unnecessary and even foolish. This would seem to apply especially to many of the changes, or rather the havoc, wrought by our modern genus of "realtors", or worse yet "sub-dividers". How they often unnecessarily and even foolishly cut down a copse of trees or a thicket of bushes is well known.

Equally disastrous is some of the modern draining of swamps, which so entirely changes the aspect of a countryside and deprives hundreds and thousands of birds and other animals of their legitimate habitat.

Once in awhile, however, it happens that nature herself produces a change for the better in a certain habitat. A very interesting instance of this kind was noticed by the writer in Texas during two stays there in 1925 and 1926. The former year was an exceptionally dry one, even for Texas, it not having rained in some parts for over a year or more. During the stay near Kingsville, some twenty miles north of Corpus Christi, I visited a so-called pasture. This, in the local vernacular, means a piece of original prairie, sparingly covered with the typical Texas small trees, such as mesquite, huisache, retama, and rattle-box (*Daubentonia longifolia*). In 1925 this place was bone-dry. The sparse grass more or less turned gray and brown, and the cow paths were distinctly dusty. The bird population was correspondingly small in this area of about a hundred acres. The only birds seen were Scissor-tailed Fly-catchers, Yellow-billed Cuckoos, Western Lark Spar-

rows, Western Mockingbirds, several pairs of Western Mourning Doves, Western Blue Grosbeak, and a Turkey Vulture sailing overhead.

The year 1926 on the contrary was an unusually wet year for this part of Texas. I again visited the same spot. To my surprise I heard a regular din and babel of bird voices issuing from it, even from a distance. On reaching the edge of the tree-covered area, I found it to be covered by two or three feet of water, on which floated thousands of the pretty blue water-lily (*Castalia elegans*), and other species equally interesting to the northerner. The bird population in numbers and variety was equally bewildering. Here is a list of species seen in this now lovely spot during five or six visits: 150 White-faced Glossy Ibises; several Wood Ibises; 1 Roseate Spoon-bill; several Pied-billed Grebes with nests; 10 Mexican Grebes, mostly with young on their backs; 100 Laughing Gulls; 30 Ruddy Ducks; 1 Scaup Duck; 75 Mexican Cormorants; 20 Anhingas; many Louisiana Herons, Little Blue Herons, Little Green, and Black-crowned Night Herons; 1 Ward's Heron; many Florida Gallinules, with nests or young; many Purple Gallinules, with nests and eggs; 200 Coots, with nests and eggs; 50 Black-necked Stilts; 1 Killdeer; several Rio Grande Red-wings; 1000 Great-tailed Grackles, with young in the nests, or eggs, as high as five nests in one bush.

Add to these the residents of the year before, plus four or five Nonpareils, several Gray-tailed Cardinals, a Lesser Cliff Swallow, and ten Texas Night Hawks soaring overhead and one has to admit that there was not only greatly increased bird life here, but a regular congestion of it. The poor old Scissor-tails certainly had their hands full. They ordinarily sail into every bird that comes near them, but this year they were overwhelmed, almost stupefied with the numbers of birds around them, so that they could only make weak attempts at jabbing any bird that came near them. The Great-tailed Grackles which frequently act the part of clowns among the birds of the Gulf Coast, here exhibited themselves as ogres. They sometimes sneaked up to a silently-standing young Black-crowned Night Heron and pushed it off its perch into the water below. This, however, would not disconcert the herons very much, as they would just swim up to the nearest bush and clamber up on it.

It is evident that such a natural change, produced simply by the difference between a dry and a wet season would be impossible in the latitude of Chicago and probably in most other places.

River Forest, Illinois.

# NOTES ON THE BIRDS OF SOUTH CENTRAL KANSAS

BY F. M. ALEXANDER

The birds considered in these notes are those which have been observed in the past few years on or near a farm located near Wellington, Kansas. This farm is not radically different from others in this locality, being level upland, and possibly having a few more trees than the average; the land not in pasture is given over to the growing of wheat, corn and sorghums, and hay. There are no streams within a quarter of a mile, so that water birds and shore birds are not commonly met with; but during periods of migration many flocks of ducks and geese are seen. Winters as a whole are open and mild with a few short periods of zero and snowy weather. During the summer there are often periods of extreme heat but there is always sufficient rainfall for the growth of crops.

Among diving birds the Pied-billed Grebe is the only common one. Horned Grebes are occasionally seen.

Gulls and terns are fairly common in the spring, especially during April and May when they follow the plows and listers in the corn fields. The same birds will often visit a field regularly for several days as in the case of what appeared to be an immature Franklin's Gull. Franklin's Gulls are the most common, sometimes coming in flocks of a hundred or more; however, on May 3, 1927, three Herring Gulls spent the afternoon in the field. Black Terns are common during this time but in smaller flocks than the gulls and rarely ever do they visit a field when the gulls are there. Some observers declare they have never seen the Black Terns except on the wing; however, the writer has observed them resting on the ground and on the fence posts.

Ducks and geese are seen generally only as migrants. Some of the ducks may nest around artificial lakes and in waste places but they are rare. Ducks flying north have been seen as early as February 7 and by February 23 the flight of both ducks and geese was general. In some cases the flocks were low enough to distinguish them as Canada, and Snow Geese, and Pintails. Blue, and Green-winged Teals, Mallards, Pintails, and Shovellers are the most common ducks, but Bluebills, Buffleheads, Goldeneyes, Redheads, Canvasbacks, and American, and Hooded Mergansers are shot on the larger lakes. Mallards, Teals, and Shovellers are most commonly found on our upland ponds. Single pairs of Shovellers are often seen in the spring. In a recent trip through the western part of the state in a single afternoon two pairs of Shovellers were seen in separate places and in another place a male and two females.

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Along the larger streams Great Blue Herons are sometimes found Little Green Herons are common, Yellow, and Black-crowned Night Herons, rare. The Bittern is not at all uncommon.

In the spring of 1926 a pair of Sandhill Cranes flew over the farm every evening about five o'clock from the west, probably from the creek, and alighted on the stream east of the farm. They became a rather common sight until July of that year but since none have been seen until May of this year when one has again appeared on this same stream.

A small local museum contains specimens of Wilson's Phalarope, Avocets, Willets, and Curlews but these were all taken several years ago. The writer is not very familiar with shore birds but has noted Wilson's Snipe, Solitary Sandpipers, Spotted Sandpipers, and Yellow-legs. Killdeers are quite common from early in the spring as is also the Upland Plover.

The common Quail, or Bob-white, is our only representative of that order here; however, farther west in this state Prairie Chickens are found in large numbers. Early this spring Mexican Quail were distributed over the county, four in a place where there were flocks of the common quail, with the hope of improving the vitality of the local species. Efforts at introducing pheasants have met with only moderate success. A flock of fourteen quail spent the past winter along an osage orange hedge near the buildings. Shocked cane and other feed around the barns no doubt had considerable attraction for them; on one occasion the writer found them just outside the hen house. On June 5 a nest and pair of old birds were found along this same hedge. The nest was made of dry grass, slightly depressed in the ground, covered with grass above with an opening to the south and contained two eggs.

Mourning Doves arrive in March and are common until late fall. Their nests are often made on the ground in wheat fields, and during harvest the bird flies off in apparent great distress at the approach of the binder. It uses the ruse of being injured to lead any intruder away from its nest more than any other of our local birds.

Although eagles have been killed here in years past, it was not until November 20, 1927, that the writer ever found a wild one here. While rounding a bend in the road through rough pasture land, I came onto a large Golden Eagle feeding on a jack rabbit and not more than thirty feet away. The approach and stopping of the car did not seem to interest him, but after several minutes the continued attacks of three crows finally made him rise and after circling several times alighted

on a fence post about 300 yards across the pasture.

Marsh Hawks are perhaps most often seen here while Swainson's, Cooper's, and Rough-legged Hawks are not at all rare. A pair of Marsh Hawks were seen almost daily at the farm during the winter. Sharp-shinned, and Sparrow Hawks are also fairly common; it may not always hold true but I see the former only in winter months and the latter during the summer. The Prairie Falcon is rare.

On March 31 of this year, nine days later than last year, the first Burrowing Owls of the season appeared. Four years ago these owls took up residence in abandoned prairie dog holes and now there are several colonies through the pasture. In the fall as many as seventeen owls have been counted sitting about the entrance to one hole. The young drop into the holes on the slightest pretense but the older ones allow a person to approach quite closely before flying or entering the holes and show little fear of horses or cattle. Short-eared Owls, Screech Owls, and Barn Owls are relatively common but Horned Owls are rare.

The Belted Kingfisher is not often seen here. Two were seen in March of this year. Hairy, Downy, and Red-headed Woodpeckers are common, the former being seen during much of the year. The Red-headed Woodpecker does not become common until late in April or early May. By March Flickers have arrived in considerable numbers and are common all summer.

Although Chimney Swifts occur here I have not seen a great many. While going to school at Manhattan the writer had opportunity a number of times to observe the Ruby-throated Hummingbird as it was flying among the flower beds on the campus, but the bird seems to be rare in this section. Nighthawks are very common during the summer. I have found their "nests" in June in wheat fields and in corn fields. Two years ago while cutting wheat two young ones were found. These were about the size and shape of the domestic chick, a light gray in color and while they were not large enough to fly were active and proficient at concealing themselves in the wheat stubble.

The Scissor-tailed Flycatcher is frequently seen here during the summer, generally arriving late in April. The common Kingbird and Arkansas Kingbird are here in large numbers by May. They do most of their hunting on the wing returning generally to the same perch after making a short flight.

Both the Prairie Horned Lark and the Meadowlark are present the year round, if anything more generally seen in winter. Many small flocks of around a dozen can be found near farm buildings and feed

yards during the winter. Even during snow storms I have seen them searching for food on ground swept clean by the wind.

The Blue Jay generally arrives by the middle of April. Apparently the bird prefers the town to the country as it is more often seen there. There is rarely a time that a few Crows cannot be found. Early this spring the Crows and Blackbirds were doing an unknown amount of good by eating grubs and cutworms which were causing damage to wheat. A bounty of five cents a head is given on Crows by the county and there is some agitation to have this law repealed. The Red-winged Blackbird is the first to arrive here, followed closely by the Yellow-headed Blackbird which remains until early May. Bronzed Grackles arrive early and are sometimes seen in the winter as are Cowbirds. Small flocks stay for days during the winter in the feed lots and on January 10, 1927, there were three birds which appeared to be Rusty Blackbirds. In September, October, and November the large flocks of grackles and Cowbirds do considerable damage in kafir corn fields, in some cases eating practically all the grain in the field.

Orchard Orioles and Baltimore Orioles are fairly common. I see only a few American Goldfinches during the summer but some report seeing them frequently. English Sparrows and Harris's Sparrows are present in large numbers the year yound. Fox, Lark, and Black-throated Sparrows are seen, especially the two former. The Slate-colored Junco is very common in late winter.

The Cardinal is present during the entire year. Rose-breasted and Blue Grosbeaks are but rarely seen. Indigo, and Painted Buntings are present but the latter is very rare. Even during the hottest days the Dickcissel is active and singing. The only swallow I have had opportunity to observe is the Barn Swallow and true to its name one or more broods are raised in the barn every year. Small flocks of Cedar Waxwings are sometimes seen. The White-rumped Shrike is present practically all the year and the Northern Shrike sometimes ranges this far south.

The Red-eyed Vireo is sometimes found here. The Yellow Warbler and Maryland Yellow-throat are seen, especially the former. Mockingbirds, Catbirds, and Brown Thrashers are all common during the summer. Among wrens, the House, and Carolina Wrens are both common.

The White-breasted Nuthatch, Tufted Titmouse, and Blue-gray Gnatcatcher occur here but are not common. Black-capped Chickadees are quite common. In the thrush family, Robins are very common, the Wood Thrush and Bluebird comparatively rare.

Wellington, Kansas.

# NOTES ON THE BIRDS OF CRANBERRY GLADES, POCAHONTAS COUNTY, WEST VIRGINIA

BY MAURICE G. BROOKS

High up in the Allegheny Mountains of West Virginia is a region known as Cranberry Glades, a place of unusual interest to naturalists in general, and to bird-lovers in particular. Located in Pocahontas County, in the southeastern part of the state, it forms a meeting place for many northern and southern forms. West Virginia never having been glaciated, the reedy bogs and lakes that are so common northward are almost entirely absent, and the few glades that do occur are worthy of special note.

Pocahontas County lies almost entirely above the 2,000 foot contour mark, and is mountainous throughout. The Cranberry Glades are at a level of about 3,100 feet, and surrounding them are ranges that rise to 4,600 feet. Some 300 acres are included in the glades region, the whole suggesting in appearance a northern muskeg. As the name implies, Cranberries (*Vaccinium*) of two species are abundant, and with these may be found round-leaved sundew, bog rosemary, buckbean, cotton grass, horned bladderwort, and other plants suggestive of a more northern region. Around the fringes of the open glades are dense thickets of alder, with balsam fir, red spruce, and quaking aspen coming in as firmer ground is reached.

As an indication of the possibilities for the collector, it might be well to note that E. A. Preble, of the U. S. Biological Survey, and Fred E. Brooks, of the U. S. Department of Agriculture, secured here in July, 1909, specimens of the yellow-cheeked meadow mouse (*Microtus chrotorrhinus*) a species not previously reported south of the Adirondack Mountains.

Some of the ridges surrounding the glades are densely wooded with mixed spruce and deciduous forests, while on others there are open, park-like areas characterized by groves of crataegus. Where the timber has been lumbered out, dense thickets of fire cherry have occupied the spaces, so that the region offers a wide variety of conditions for the observer. Some years ago there was a lumber railroad which reached the glades, but this has been abandoned, and the territory is now accessible only to those pedestrians who are willing to hike five miles, drawn by the lure of the unusual.

Observations recorded in these notes were made on three different trips, the first about the middle of June, 1914, the second in early September, 1925, and the third in late May, 1926. Opportunity was

thus given to see something of both spring and fall migrations, while the June trip gave a week to the summer resident species.

One hundred and three species and forms were listed as follows:

American Woodcock. *Philohela minor.* Several seen both in 1914 and in 1926. The abundance of their borings noted in the sand and muck banks around the alder swamps seems to indicate that the species is common. Mr. Frank Houtchens, a trapper of this region, reports that he has several times found "Snipe's" nests in the snows of late spring, and says that he has seen the old bird on the nest with only her head above the snow.

Solitary Sandpiper. *Tringa solitaria solitaria.* One observed along a branch of Cranberry River September 7, 1925.

Spotted Sandpiper. *Actitis macularia.* Common summer resident along Cranberry River, which flows out of the glades.

Hudsonian Curlew. *Numenius hudsonicus.* A single specimen of this bird was collected May 25, 1926, by A. B. Brooks, C. L. Brooks, and the author. When seen, the bird was nervously running about on the sphagnum of Big Glade. The specimen is deposited in the State University Museum, at Morgantown, W. Va. This is the only recorded occurrence of the species within the state.

Bob-white. *Colinus virginianus virginianus.* Apparently not common here. One heard calling on the uplands above the glades September 7, 1925.

Ruffed Grouse. *Bonasa umbellus umbellus.* Seen on all three trips. Commonly found dusting themselves along the old lumber railroad right-of-way.

Turkey Vulture. *Cathartes aura septentrionalis.* Occasionally seen flying above the glades. Very abundant in more settled parts of the region.

Marsh Hawk. *Circus hudsonius.* One observed September 7, 1925. Its breeding here is a possibility, but this has not been definitely recorded.

Sharp-shinned Hawk. *Accipiter velox.* Fairly common about the wooded ridges.

Cooper's Hawk. *Accipiter cooperi.* Seen less frequently than the last.

Red-tailed Hawk. *Buteo borealis borealis.* Often seen circling high in the air above the glades.

Red-shouldered Hawk. *Buteo lineatus lineatus.* Circling and calling, thus making itself frequently conspicuous.

Broad-winged Hawk. *Buteo platypterus platypterus.* A pair of these birds, giving their characteristic whistle, were seen repeatedly on the June, 1914, visit.

Sparrow Hawk. *Cerchneis sparveria sparveria.* Commonly seen in the dead trees about the edges of the glades.

Barred Owl. *Strix varia varia.* The varied notes of this species help to make the nights on the glades interesting.

Screech Owl. *Otus asio asio.* Heard commonly.

Great Horned Owl. *Bubo virginianus virginianus.* In the owl chorus this fellow carries an abundant bass. Frequently heard in broad daylight about the glades.

Yellow-billed Cuckoo. *Coccyzus americanus americanus.* Not uncommon.

Belted Kingfisher. *Ceryle alycon.* Seen and heard along the Cranberry River at the lower end of the glades.

Hairy Woodpecker. *Dryobates villosus villosus.* Common on the wooded ridges above the glades.

Downy Woodpecker. *Dryobates pubescens medianus.* Abundant throughout the region.

Yellow-bellied Sapsucker. *Sphyrapicus varius varius.* This species appears to be a summer resident, since it was heard frequently on all three trips.

Northern Pileated Woodpecker. *Phloeotomus pileatus abieticola.* The rolling notes of the big Pileated often come down from the higher ridges above the glades. Frequently seen flying from one mountain-side to the other.

Red-headed Woodpecker. *Melanerpes erythrocephalus.* Not uncommon.

Red-bellied Woodpecker. *Centurus carolinus.* Probably fairly common. Seen several times on the September, 1925, visit.

Northern Flicker. *Colaptes auratus luteus.* Common.

Whip-poor-will. *Antrostomus vociferus vociferus.* The dense alder thickets bordering the glades form a cover from which Whip-poor-wills may sometimes be flushed in daytime. Commonly heard.

Nighthawk. *Chordeiles virginianus virginianus.* Abundant in their fall flight September 7, 1925.

Chimney Swift. *Chaetura pelagica.* There being no permanent human habitations near the glades, we wondered at the abundance of this bird, and just how far it kept up its habit of nesting in hollow trees. At the lower end of the glades, in 1914, stood a large abandoned

lumber camp. In connection with this had been an open blacksmith shop with the forge set against the board wall. This wall had become heavily covered with soot, and plastered to this wall we found, to our delight, several nests of the swift. Thus had the birds taken advantage of every opportunity to show their preference for the artificial conditions.

Ruby-throated Hummingbird. *Archilochus colubris.* Common. A nest, with eggs, found May 27, 1926, in a red spruce. The nest was placed on a tuft of "Reindeer Moss".

Kingbird. *Tyrannus tyrannus.* Apparently not very common, but seen several times around the crataegus thickets.

Crested Flycatcher. *Myiarchus crinitus.* One pair seen in deciduous woods May 27, 1926.

Phoebe. *Sayornis phoebe.* Common about the abandoned lumber camps.

Olive-sided Flycatcher. *Nuttalornis borealis.* This fine flycatcher makes himself conspicuous all around the glades. Selecting the topmost twig of a spruce or balsam, he sends his unmistakable "Come right here" note out to greet you long before you reach the glades themselves. This locality is one of the few places in the state where one can be sure of finding the bird at any time during the summer.

Wood Pewee. *Myiochanes virens.* Fairly common.

Acadian Flycatcher. *Empidonax virescens.* This is not good country for the Acadian, but he can be found along the beech-bordered streams of the uplands. Not seen about the glades themselves.

Alder Flycatcher. *Empidonax trailli alnorum.* This species is here nearing its southern breeding limit, and it is surprising to find it so abundant. Whether or not it may be a coincidence, in June, 1914, and in May, 1926, old nests with young of this species dead were found. Two nests were located each year, each nest having two or three dead young birds in it. No explanation is offered.

Least Flycatcher. *Empidonax minimus.* Abundant. During the first week of June, 1914, four nests with eggs were found in the glades region.

Blue Jay. *Cyanocitta cristata cristata.* Common throughout the region.

Northern Raven. *Corvus corax principalis.* The raven is rare in West Virginia, but it may be seen occasionally near the glades.

Four were watched and heard June 6, 1914, and a fine opportunity for comparison was offered when a crow obligingly attacked them.

One of the striking features of bird life in the region covered by this paper is the large number of "wild-sounding" notes to be heard day and night. Hawks, owls, jays, and flycatchers all contribute, but by far the most impressive is the croak of the raven.

CROW. *Corvus brachyrhynchos brachyrhynchos.* Common.

BOBOLINK. *Dolichonyx oryzivorus.* A pair, doubtless late migrants, observed May 27, 1926. Bobolinks pass through the central part of the state in spring migration during late April, and these had lingered beyond their season apparently. Although known to breed in the state, the only known locality is in some two hundred miles northwest of the Cranberry region.

COWBIRD. *Molothrus ater ater.* An egg of this parasite in the nest of a Song Sparrow in 1926, was proof of its presence.

RED-WINGED BLACKBIRD. *Agelaius phoeniceus phoeniceus.* Common along the water-courses.

BRONZED GRACKLE. *Quiscalus quiscula aeneus.* A few seen.

PURPLE FINCH. *Carpodacus purpureus purpureus.* The presence of this bird in considerable numbers in June, 1914, would seem to indicate that it breeds here. Young were seen September 7, 1925.

GOLDFINCH. *Astragalinus tristis tristis.* Abundant.

VESPER SPARROW. *Pooecetes gramineus gramineus.* Found in the park-like uplands.

WHITE-THROATED SPARROW. *Zonotrichia albicollis.* One heard singing May 24, 1926. There is no West Virginia breeding record for this species.

CHIPPING SPARROW. *Spizella passerina passerina.* Common around the crataegus groves.

FIELD SPARROW. *Spizella pusilla pusilla.* In the grassy uplands.

CAROLINA JUNCO. *Junco hyemalis carolinensis.* Abundant throughout.

SONG SPARROW. *Melospiza melodia melodia.* Very common.

SWAMP SPARROW. *Melospiza georgiana.* Perhaps the most abundant bird in the glades proper. Several nests were found in May, 1926. On moonlit nights this bird sings as freely as in the daytime.

TOWHEE. *Pipilo erythrophthalmus erythrophthalmus.* Fairly common on the ridges.

CARDINAL. *Cardinalis cardinalis cardinalis.* Rare at this altitude, where its place is taken by the Rose-breasted Grosbeak. One seen September 7, 1925.

Rose-breasted Grosbeak. *Hedymeles ludovicianus.* Quite common summer resident. One of the most showy features of the landscape.

Indigo Bunting. *Passerina cyanea.* Only one seen here, where the surroundings do not suit it. Seen in blackberry thicket September 7, 1925.

Scarlet Tanager. *Piranga erythromelas.* Several seen in the higher regions around the glades.

Tree Swallow. *Iridoprocne bicolor.* Many seen in September, 1925.

Bank Swallow. *Riparia riparia.* Common along the Cranberry river below the glades.

Cedar Waxwing. *Bombycilla cedrorum.* This species was observed several times feeding on the tent caterpillar larvae which abounded on the wild cherry. Common at all seasons visited.

Red-eyed Vireo. *Vireosylva olivacea.* Common on the chestnut and oak timbered ridges.

Yellow-throated Vireo. *Lanivireo flavifrons.* In same localities as the last-named species, but less common.

Mountain Solitary Vireo. *Lanivireo solitarius alticola.* Frequently observed. Several specimens were taken to establish the record in 1914.

Black and White Warbler. *Mniotilta varia.* Common in deciduous woods.

Worm-eating Warbler. *Helmitheros vermivorus.* A few seen in deep woods along small streams.

Blue-winged Warbler. *Vermivora pinus.* An exceedingly tame individual of this species visited our camp May 28, 1926. He allowed himself to be thoroughly examined at a distance of only a few feet. This was the only one seen.

Golden-winged Warbler. *Vermivora chrysoptera.* Many seen and heard in May and June. Evidently breeds here commonly.

Nashville Warbler. *Vermivora ruficapilla ruficapilla.* Not known to breed in Cranberry Glades, although it does breed commonly in a glady region about one hundred and fifty miles north. Many were seen in May, 1926.

Yellow Warbler. *Dendroica aestiva aestiva.* Found around the crataegus groves above the glades.

Cairn's Warbler. *Dendroica caerulescens cairnsi.* Specimens matching the descriptions of this subspecies were taken in June, 1914.

Doubtless the type form also occurs, but I have seen no specimens to back it up.

MAGNOLIA WARBLER. *Dendroica magnolia.* Common summer resident.

CHESTNUT-SIDED WARBLER. *Dendroica pensylvanica.* Apparently the most common warbler in the brushy thickets about the glades. During the times that birds sing here one is scarcely ever out of hearing of this species.

BLACKBURNIAN WARBLER. *Dendroica fusca.* Observed in June, so it probably breeds here. Seen also in May, 1926.

BLACK-THROATED GREEN WARBLER. *Dendroica virens.* Abundant summer resident.

OVEN-BIRD. *Seiurus aurocapillus.* Common on the dry ridges.

NORTHERN WATER-THRUSH. *Seiurus novaboracensis novaboracensis.* As the Chestnut-sided Warbler is abundant in brushy places, so the Northern Water-Thrush is along the wooded streams. Four, five, or six singing at one time is nothing unusual.

LOUISIANA WATER-THRUSH. *Seiurus motacilla.* Rare when compared with the last-named species. A few occur regularly.

MOURNING WARBLER. *Oporornis philadelphia.* An abundant warbler at the glades in June, 1914, this species was seen only once in May, 1926. On my first trip to the glades, that of June, 1914, our party managed to get lost for the greater part of the day. Carrying heavy packs, we wandered about through rhododendron and blackberry thickets for what seemed an illimitable number of miles, but late in the evening, to the accompaniment of a Veery serenade, we broke through a fringe of bushes to see the promised land of the glades before us. Suddenly our packs, and the miles we had carried them, were forgotten, for right in front of us there appeared a pair of warblers with bluish-gray heads and white eye-rings. When the male burst into full song we knew we had found the Mourning Warbler, one of the objects of our search.

MARYLAND YELLOW-THROAT. *Geothlypis trichas trichas.* Abundant in the whole glade region.

YELLOW-BREASTED CHAT. *Icteria virens virens.* Not very common.

HOODED WARBLER. *Wilsonia citrina.* Found in all the uplands of the region.

CANADA WARBLER. *Wilsonia canadensis.* The Canada flashes his necklace in many of the thickets about the glades.

REDSTART. *Setophaga ruticilla.* Abundant at the times of all three visits.

Catbird. *Dumetella carolinensis.* Common.

Brown Thrasher. *Toxostoma rufum.* Frequents the open spaces on the ridges.

Carolina Wren. *Thryothorus ludovicianus ludovicianus.* Common.

Bewick's Wren. *Thryomanes bewicki bewicki.* Not very common, but a few heard.

House Wren. *Troglodytes aedon aedon.* Frequently seen about the abandoned lumber camps. Much more common than the last.

Winter Wren. *Nannus hiemalis hiemalis.* This tiny bit of condensed melody pours out his song from the thickest and dampest ravines of the region.

White-breasted Nuthatch. *Sitta carolinensis carolinensis.* Common on the ridges.

Red-breasted Nuthatch. *Sitta canadensis.* Abundant summer resident.

Tufted Titmouse. *Baeolophus bicolor.* Common.

Chickadee. *Penthestes atricapillus atricapillus.* Specimens taken here, together with the song, show this to be the northern Chickadee, rather than the Carolina Chickadee which is found in the lowlands of the state. The latter species probably occurs.

Golden-crowned Kinglet. *Regulus satrapa satrapa.* Abundant in September, 1925. This species breeds regularly in the Red Spruce belt of the state.

Blue-gray Gnatcatcher. *Polioptila caerulea caerulea.* Not uncommon in the dry woods above the glades.

Wood Thrush. *Hylocichla mustelina.* Of frequent occurrence.

Veery. *Hylocichla fuscescens fuscescens.* Abundant wherever there is coniferous woods.

Olive-backed Thrush. *Hylocichla ustulata swainsoni.* Common in June, 1914; not so common in May, 1926. Probably breeds here, as its nests have been found at no great distance.

Hermit Thrush. *Hylocichla guttata pallasi.* My only definite record for this species at Cranberry Glades was made on May 26, 1926, but its occurrence in summer as a breeding bird is probable. It is a common summer resident only a few miles to the north.

Robin. *Planesticus migratorius migratorius.* Common on the open uplands.

Bluebird. *Sialia sialis sialis.* On the side of Black Mountain, above the glades is an open pasture field, and here, as might be expected, the Bluebird occurs.

French Creek, West Virginia.

# BIRDS OF BUCHANAN COUNTY, IOWA

BY FRED J. PIERCE

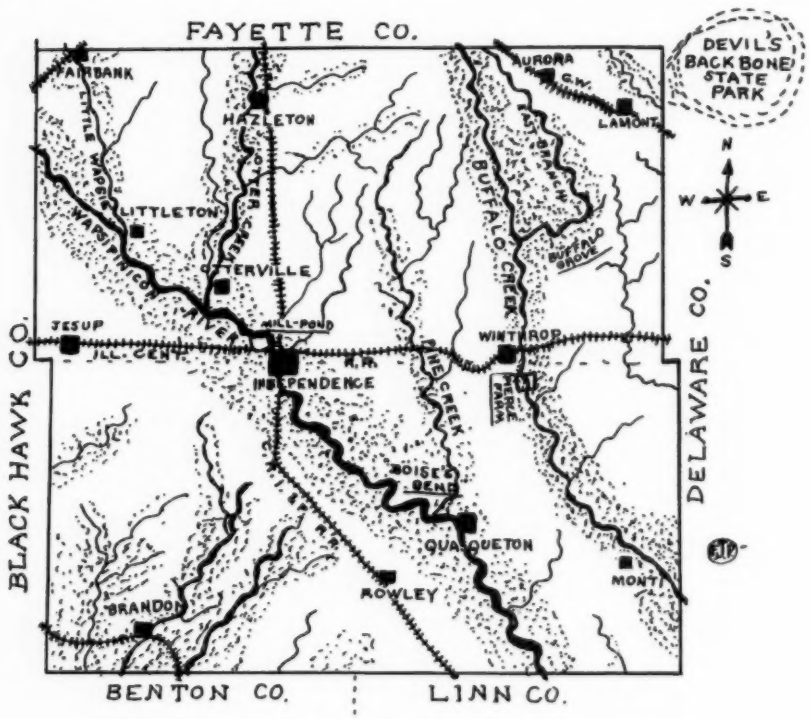
Viewed topographically, Buchanan County is very similar to its adjoining counties in eastern Iowa. It presents little variation and a summary of the general topographic aspects of the neighboring counties includes the features to be found in Buchanan as well. Studied geologically, the surface is almost entirely covered with drift of Iowan age, as left by the glacial ice. The work of erosion is absent except in a few scattered localities, and any variation in topographical features is to be mainly accounted for by the ice forces which molded the surface ages ago. Taken as a whole, Buchanan County is a succession of broad, slightly rolling prairies, drained by a number of streams of varying size, around which virgin woodland is to be found. The drainage is effected principally by the Wapsipinicon River and its branches. This river flows in a general southeast direction from the northwestern to southeastern edge of the county, being joined by the Little Wapsipinicon at Littleton. Buffalo Creek, a typical prairie stream, meanders from north to south through the eastern portion of the county. Its course is parallel to some extent to the Wapsipinicon. There are seven or eight minor streams.

Buchanan County is twenty-four miles square; it is square in shape except for a slight correction jog which divides the county into two nearly equal parts, upper and lower. On the eastern side, Delaware and Dubuque Counties lie between it and the Mississippi River and the State of Illinois, a distance of some sixty miles. On the north Fayette and Winneshiek Counties separate it from Minnesota. Buchanan also touches Black Hawk on the west and Benton and Linn Counties on the south.

Small tracts of natural timber are scattered about the county, but the extensive wooded regions are found only along the water courses. One hundred or more trees are indigenous to the county. All along the Wapsipinicon River the belt of timber was formerly wide and heavy, but the work of the wood-cutter has greatly reduced the acreage of standing timber. The native timber is fast disappearing, a fact that nature lovers note with regret. The oaks and hickories are the principal trees to be found wherever there are woodland tracts of any size. Buffalo Creek, for the greater part of its course, flows through a very narrow belt of woods, consisting chiefly of ash and soft maple, except in the northern and southern parts of the county, where the larger tracts of oak and hickory occur. Wild plum and crabapple thickets are common all over the countryside. Where the timber has been cut

within recent years, hazelbrush invariably grows up in rank profusion, while in places where hazelbrush is less persistent and the land more in the nature of grassy pastures, the hawthorn bush is much in evidence.

The natural features of the county are sufficiently diversified for the attraction of practically all forms of bird-life regularly found in the upper Mississippi Valley, and representatives from all groups of birds that follow the great Mississippi Valley migration route are to be found along the Wapsipinicon and its tributaries at the proper




season. Among the many places favorable for birds within the county, I shall briefly mention a few that have proved particularly good. There is a large tract of timber a mile southeast of the village of Monti, in the southeastern corner of the county. Buffalo Creek flows through the tract, which is an ideal one for bird study at any season of the year. The country about "Boise's Bend", about three miles upriver from Quasqueton, is also very good. Here the Wapsipinicon describes a great bend and flows through a wooded gorge, on whose sides bluffs rise to a height of 100 feet at several points—a region of great interest during the spring migration. Buffalo Grove, a tract of hard-

wood timber six miles north of Winthrop, is another bird haunt that has given me unusual species. The mill-pond at Hazelton I have visited many times. Although the pond is too near the town to attract many water-birds, the heavy woods lying along its western shores constitute very fine warbler territory in spring migration. The Independence mill-pond, an area 200 acres or more in extent, is by far the best territory for water-birds within the county, and most of my work with this group has been done at this place. The dam is in the center of the city, but the mill-pond begins a half mile up the river, outside of the city. The land is quite level here and the river backs up nearly a mile, turning the land into a region of narrow, tree-covered islands, ponds, shallow lakes, and shaded lagoons, surrounded by much marsh land. (See "Bird-Life at an Iowa Mill-Pond", *Bird Lore*, XXXI, 1929, p. 105). Much of my bird work has been conducted at the John M. Pierce farm, which lies on Buffalo Creek three miles south of Winthrop. Although I had little time for concentrated bird study while working on the farm on week-days, the birds were always about me, and I often made unusual and interesting records while going about my regular work. No one has greater opportunity for casual observation of this sort than has the farmer.

The natural enemies of birds in Buchanan County are apparently in minimum numbers. The extensive and long-continued trapping of all fur-bearing mammals by men and boys has almost wiped out skunks, minks, weasels, and other predatory species which must have preyed on bird-life to a serious extent in former years. Reptiles seem to be very scarce also. But man, in his work in many directions, has inadvertently depleted the numbers of many birds. The timber lands are being devastated quite rapidly, ponds and sloughs are drained, while the mowing-machine and grain-binder destroy countless nests and often incubating birds which are on the ground in haying and harvest time. Sloughs and hedges are sometimes burned during nesting time. Two paved highways, having a total length of about fifty miles, cross the county. A major part of the traffic on these roads moves at from forty to sixty miles an hour, and considerable bird-life is destroyed by the fast-moving autos; most of the victims are low-flying birds that inhabit the fields or the more open country.

My bird work in Buchanan County has extended from 1917 to 1930, and the list of birds comprising this paper, the result of my observations during this period, represents my present knowledge of the avifauna of this region. A great deal of time has been spent in the field during these years, in an effort to make the catalogue as com-

plete and representative as possible. In 1921 I published a short list of ninety-eight species seen in 1919,1920. ("Buchanan County, Iowa, Birds", *The Oologist*, XXXVIII, 1921, pp. 4-7).

In compiling the list I have made use of several sources of information other than my own records. Chief among these are the records of Mrs. Robert I. Bordner, a resident of Buchanan County for many years who made extensive studies of birds during her residence. She has very kindly given me permission to make use of all of her records that do not duplicate my own. Records that are not my own are indicated by the asterisk (*) in the following list.

Although there have been several residents of Buchanan County who have made some study of its bird life, so far as I know there have been no papers on Buchanan County birds published in the bird journals except my own writings, which have appeared during the last decade. A list of my papers relating to this county is given at the end of the present paper.

The following list contains 215 named forms.

HOLBOELL'S GREBE. *Colymbus holboelli.* A rare visitant. I have but one record, April 25, 1926, when one bird was observed at the Independence mill-pond. It was seen in the late afternoon, when the rays of the sun were directly upon it. It was in a small, willow-bordered cove, about twenty-five rods away, and was studied for a long time with 45x telescope on tripod. All markings were distinctly seen —black forehead, crown, and nape; very distinct white throat and rufous neck; grayish back. It was a very large and handsome bird; part of the time it folded its neck back upon its back, swan-like. The bird was with a flock of Blue-winged Teals, Shovellers, Redheads, Canvasbacks, Scaups, and Coots, about forty birds in all. This bird was also observed by Richard Gillespie, Vance Allyn, and Harvey Nichols, all reliable observers. The record was first published in *Bird-Lore*, (XXXI, 1929, p. 106). Holboell's Grebe may occur at the mill-pond quite regularly, but due to its extreme wariness, it is only rarely seen.

HORNED GREBE. *Colymbus auritus.* A scarce visitant. On April 22, 1928, one bird was carefully studied on a lagoon at the Independence mill-pond. Several others were seen at some distance, and one dead bird was found on the shore.

PIED-BILLED GREBE. *Podilymbus podiceps.* A rather common migrant in spring and fall; seen most frequently at Independence mill-pond. Spring dates, from April 6 to May 23; seen in the fall as late as October 17.

Loon. *Gavia immer.* A rare visitant. My only record was made on April 7, 1929, when one bird was seen at the Independence mill-pond. The bird was first seen in the air, but it soon dropped to the water, where it at once dived and reappeared far away, a performance repeated many times. I was astonished to note the speed with which it swam under water, indicated by the points of its reappearance which were so far from the place where it dived. I had become familiar with the Loon on Round Lake, Crow Wing County, Minnesota, in September, 1926, and this bird was satisfactorily studied with 8x glass.

Franklin's Gull. *Larus franklini.* Rare visitant. I have but one record for this species—April 28, 1919, when two birds were seen at the Pierce farm, southeast of Winthrop. I was plowing that day, and these birds followed me back and forth across the field many times, pausing here and there to pick up food from the freshly turned furrows.

Forster's Tern. *Sterna forsteri.* Fairly regular spring migrant, seen at the Independence mill-pond. It is possible that some of my records may be for *Sterna hirundo*, which is so similar I have not attempted to separate the two in the field. I have referred all records to *Sterna forsteri*, which is apparently the more common species in Iowa. It arrives in the last part of April or first week in May, usually but two or three birds seen on arrival; but I have seen as many as fifteen at one time (May 5, 1929). I have one fall record, August 1, 1926.

Black Tern. *Chlidonias nigra surinamensis.* Fairly common spring migrant, seen at the Independence and Hazelton mill-ponds, and often seen proceeding across the open country, where it flies quite low over the newly plowed fields. Arrives in the first half of May, in flocks of from four or five to thirty-five birds. I once saw 200 in one flock. It is quite often seen in the Independence region during the summer, and there is good reason for thinking it may nest there occasionally. Latest fall date, August 21.

Double-crested Cormorant. *Phalacrocorax auritus auritus.* Regular spring migrant at the Independence mill-pond, arriving in the last half of April. I have seen it there as early as April 6 and as late as May 23, but most of the birds have departed by early May. My latest fall record is October 16, 1926. The bird is usually seen in small numbers, but on April 25, 1926, a flock of eighty was seen, and on April 24, 1927, a flock was seen which contained from 150 to 175 birds. The last flock was well out on one of the large lakes. The

birds floated quietly in a compact group, and the water was fairly black with them. The formation had the appearance of an island at the distance from which I saw them. On April 13, 1930, I found a flock of about 200 there. On nearly all of my April trips to this mill-pond I have seen the Double-crested Cormorant. The birds are either flapping slowly back and forth over the treetops or are perched in dead trees on the islands. Many stumps and rotting snags stand in the water at different places about the mill-pond. These are favorite perches for the cormorants. The occurrence of this species in Buchanan County has been quite fully described in *Bird-Lore* (XXXI, pp. 105-107).

WHITE PELICAN. *Pelecanus erythrorhynchos.* I have one positive record, that on April 28, 1929, when one bird of this species was seen at the Independence mill-pond. I have several times been fairly certain that I saw the bird, but had to leave it unrecorded because of the distance at which it was observed. The bird seen at Independence did not stop at the mill-pond, though it flew directly over it, going north. It passed over me at a height of 200 feet and was studied carefully with 8x glass in bright sunlight.

RED-BREASTED MERGANSER. *Mergus serrator.* Probably rather common in former years. I have one record—a flock of fifteen birds seen at the Independence mill-pond April 21, 1929.

MALLARD. *Anas platyrhynchos.* Formerly a very abundant migrant and doubtless many bred in the county. It is still a common migrant. Appears early in March and late September. Most of the fall Mallards pass through the county in October. Small flocks often linger until December in sheltered places where there is open water. I saw a flock of five Mallards on a small stream at the Devil's Backbone State Park, Delaware County, on December 23, 1923.

*BLACK DUCK. *Anas rubripes.* Mrs. R. I. Bordner gives me two records: September 25, 1922, a pair on a pond north of Winthrop; April 18, 1926, three at Independence mill-pond.

GREEN-WINGED TEAL. *Nettion carolinense.* A spring and fall migrant that seems to be somewhat scarce at the present time. It is much less common than the Blue-winged Teal. My earliest spring record is April 6.

BLUE-WINGED TEAL. *Querquedula discors.* A common migrant, probably the commonest of the ducks in eastern Iowa. It arrives in early April and is common at the Independence mill-pond until the last of May. I have never found its nest, but I believe the bird nests at the mill-pond. Latest fall date, September 13.

SHOVELLER. *Spatula clypeata.* A migrant appearing in small numbers regularly each year. The most I have seen at one time was a flock of fifteen. Spring dates, March 30 to May 20. Latest fall date, October 6.

PINTAIL. *Dafila acuta tzitzihoa.* Formerly common but now scarce. I saw a flock of seventy-five March 21, 1926; a smaller flock of twenty-five was seen on March 30, 1930. I have no fall records.

*WOOD DUCK. *Aix sponsa.* Hunters have found the Wood Duck a rather common migrant in former years, but it is now rare. W. M. Woodward of Independence, says he has seen many of the birds along the Wapsipinicon in past years.

REDHEAD. *Marila americana.* I have one record—three birds seen at the Independence mill-pond on April 25, 1926.

CANVAS-BACK. *Marila valisineria.* Very scarce. Seen only twice in Buchanan County—on April 26, 1925, and April 25, 1926, at Independence mill-pond. A flock of fifteen was seen on the last date.

SCAUP DUCK. *Marila* sp. A common spring migrant at Independence mill-pond, seen in flocks of from ten to forty birds. Spring dates, March 21 to May 13, also one record on June 22. To avoid possible errors I have not tried to separate *Marila marila* and *Marila affinis* in the field.

BUFFLE-HEAD. *Charitonetta albeola.* I have one record—six birds seen at Independence mill-pond April 25, 1926.

SNOW GOOSE. *Chen hyperboreus hyperboreus.* I have one record for this species. A flock of thirty-five (traveling southwest) passed over the Pierce farm on the morning of November 1, 1927. Hunters call this the "White Brant" and report it as being rather common in the county in past years.

CANADA GOOSE. *Branta canadensis canadensis.* Formerly a very abundant migrant, but in recent years it has become quite scarce. Appears in February and October, usually seen or heard migrating over the country, but seldom stopping on its journey to and from the North. On the afternoon of November 16, 1921, I saw a flock of fifty alight on a plowed field near the Pierce farm. There was a great deal of honking for a time, then the flock quieted down and formed a rather compact group. They could be very plainly seen—the big, grayish birds against the black field. After about two hours of rest they went on. The start was made with a great deal of honking and the flock turned toward the north. After proceeding for some distance, a split occurred in their ranks; about a third of their number turned and flew

southwest, while the others went on north. In a short time a flock of geese was seen flying south, and I inferred that this was the same flock hurrying to join their apparently wiser companions. The Canada Goose does considerable traveling at night, so I have missed seeing many of the migrating birds. During mild winters it is not unusual to see flocks of Canada Geese flying north or south at any time. The advance of cold weather sends them south, but a period of mild, thawy weather often brings them back again. I have many winter records for the Canada Goose—December 21, 1917; December 21, 1918; December 16, 1920; December 23, 1921; January 5 and 8, 1922; January 4, 1923; December 23, 1923; December 24, 1927; December 23 and 28, 1928. I had only one record for the Canada Goose in 1929, viz., a flock of thirty on October 28.

*Whistling Swan. *Cygnus columbianus.* One specimen of this bird, shot by an Independence hunter, was brought in to the W. M. Woodward hardware store in that city. Mr. Woodward has had much experience with game birds during the years that he has sold hunters' supplies at his store, and he identified the swan for the hunter. He was unable to tell me the year in which the bird was brought in, but told me it was many years ago, at least ten or twelve years, he thought.

Bittern. *Botaurus lentiginosus.* A scarce migrant and one that I see only very irregularly. I have a few spring dates, from May 1 to May 23; I have also seen it on June 10. My latest fall record is October 12. It is hard to find because of its very retiring disposition.

Least Bittern. *Ixobrychus exilis.* The Least Bittern is probably found more or less regularly in this county, but owing to its ability to hide itself in the marsh it is only rarely seen. I saw it on May 17 and May 23, 1925, in the marsh at the Independence mill-pond region.

Great Blue Heron. *Ardea herodias herodias.* A regular migrant, appearing early in the spring. Spring dates, from March 24 to May 16. My records do not indicate the beginning of the fall migration, for the bird is seen so often during the summer months there is no way to tell just when this begins. I have seen one or two of the immense birds standing along the shores of our small streams and ponds on many different dates during the summer, beginning as early as June 26 and extending irregularly through July and August through the various years. It appears to become more common after the first of August. I have no proof that it nests within the county, but the presence of the bird through the summer, though very irregular, would seem to indicate this fact. The bird is usually quite solitary, usually only one and sometimes two being seen at one time. On one occasion,

however, I saw a flock of ten along Buffalo Creek (July 28, 1921). Latest fall date, October 24.

GREEN HERON. *Butorides virescens virescens.* Rather common summer resident, nesting along small streams, in plum thickets, and small groves. Several pairs of Green Herons nested in a willow grove on the Pierce farm for many years, then deserted the place. Tree squirrels were quite numerous in the grove, and I blamed them for the disappearance of the herons, whose nests they doubtless robbed. Arrives last week of April or first week in May and remains until the last of September. Latest fall record, October 5.

BLACK-CROWNED NIGHT HERON. *Nycticorax nycticorax naevius* Formerly a rather common summer resident, but now very scarce. The depredations of Crows at the herons' nests are doubtless responsible for their decline in numbers. The loud *quark* of the night herons used to be a common sound over Buffalo Creek in the warm summer evenings, but it is no longer. Spring arrival dates, from April 10 to May 12; latest fall date, October 10. On one occasion I saw a night heron that arrived too early in the spring and got caught in an unseasonable blizzard on April 16, 1921. I found the bird perched on a limb of a tamarack tree, his plumage heavy with the wet snow that covered the trees and ground with a white blanket—a summer bird in winter surroundings. (See WILSON BULLETIN, XXXIV, 1922, pp. 186-187).

*SANDHILL CRANE. *Grus mexicana.* Formerly a common bird in the county, but never seen at the present time. Will Griswold tells me of seeing Sandhill Cranes many years ago when he was a boy on the home farm near Winthrop. They were then rather common in the spring, and he would see the immense birds standing together on the knolls and sandy hills near his home. The following note is taken from "History of Buchanan County, Iowa, and Its People", by Harry C. and Katharyn J. Chappell, 1914 (Vol. 1, p. 35): "An old settler told us about the Sandhill Cranes that used to visit this county every fall in their migratory flights south for the winter. They would come in small flocks and in their particular haunts, the sand hills, from which they derived their name, and perform the most peculiar and interesting dance, forming a sort of circle, then balancing back and forth alamand left and circling right, resembling the figures of a cotillion, flapping their wings and seeming to thoroughly enjoy the terpsichorean art quite as much as humans." This mating dance is performed in the spring, not in the fall—a slip in the narrative of the old settler, no doubt.

*King Rail. *Rallus elegans.* Mrs. R. I. Bordner gives me the following records: June 8, 1918; April 22, 23, 24, and 30, 1924. One bird was seen each time, and all were seen in the same location, a marshy roadside north of Lamont.

Virginia Rail. *Rallus virginianus.* I have a number of records made at Independence mill-pond (one bird seen each time): May 23, 1926; August 21, 1927; May 13, 1928 (dead bird found inside the rails of Rock Island tracks); May 12, 1929 (this bird I found along a small stream near a culvert. It was three feet from me and suddenly darted out of sight. I looked closely and found it hiding in some grass beside the culvert. It seemed very tame and it was almost like holding the bird in my hand).

Sora. *Porzana carolina.* Common migrant in most years, but I am unable to find it some years. Spring dates, May 5 to May 23. I have seen as many as a dozen at the Independence mill-pond in one day, but it is hard to find them, as a rule, for they are expert in hiding in the marsh. I have a mounted specimen of a Sora that I picked up in a ditch beside a paved highway near Winthrop on May 12, 1929. Its skull had been broken between the eyes, which suggested that it had struck the telephone wires beside the road.

*Yellow Rail. *Coturnicops noveboracensis.* One was flushed from the marsh grass at Independence mill-pond by Vance Allyn on May 16, 1926. He viewed the bird at a distance of only a few feet and was entirely certain of the identification. I was walking a few rods behind him and missed seeing the bird. We searched in the marsh at that point, but it could not be found again.

Florida Gallinule. *Gallinula chloropus cachinnans.* Rare. My only record is one bird that I found along a tiny stream on the Pierce farm on May 2, 1919.

Coot. *Fulica americana.* A common migrant and probably a summer resident at Independence mill-pond. It is always very common in the spring at this mill-pond and is present in flocks varying from a dozen to a hundred birds. Arrives last week in March or first week in April. Latest fall date, October 17.

Wilson's Phalarope. *Steganopus tricolor.* I have one record, a pair seen on a small pond at the Independence region on May 2, 1926.

*Black-necked Stilt. *Himantopus mexicanus.* "Last spring (1924) north of Lamont there were ponds in fields that had held no water for years, and we haunted that vinicity. . . . The ponds lasted all summer owing to the many rains we had, and in August we found a

pair of Black-necked Stilts. You may be sure we were again daily visitors and on August 31 we visited the pond three different times during the day to observe the stilts. They were unafraid, allowing us to approach very near. Nearly every day (September 5, 6, 7, and 8, 1924) we returned to this pond on the outskirts of Lamont where there were also flocks of Yellow-legs, four Blue-winged Teals, and one Green-winged Teal in addition to the stilts. September 12 the water was gone and also the birds. This was very interesting to me, for I had never before seen a stilt, and to observe them so closely was indeed a pleasure."—Mrs. R. I. Bordner in a letter to me dated February 17, 1925.

Woodcock. *Rubicola minor.* Rare visitant. I have only one record—one seen along Buffalo Creek on November 5, 1922.

Wilson's Snipe. *Gallinago delicata.* Fairly common migrant. Spring dates, March 28 to May 16; fall dates, August 8 to November 1. This bird can usually be found along ponds and in marshes at the proper season.

Pectoral Sandpiper. *Pisobia maculata.* A spring migrant usually found in small numbers. My earliest spring record is March 25 and the latest is May 18. In the fall I have seen it from July 31 to September 4, but I have only a few fall records and these are scattered through many years. I find them in small flocks of less than a dozen, as a rule, although I have found as many as 300 in a flock (this was at Independence mill-pond, April 26 and 27, 1930). They are usually found in sloughs or boggy meadows, feeding in the grass with only head and neck visible. Suddenly they will start up and fly erratically away, the whole flock often wheeling in the air as one bird. One day while I was at the Independence mill-pond I was watching a flock of Pectoral Sandpipers flying overhead at great speed. They wheeled in the air and flew very near to the telegraph wires on the railway right-of-way. As the flock swept by one of the birds struck a wire and dropped to the ground below. The bird's wing was hopelessly broken, almost completely severed from its body, so I killed it at once.

Least Sandpiper. *Pisobia minutilla.* Fairly regular migrant, but not very common. It appears in May and is seen again after the middle of August. Latest fall record, September 7.

Red-backed Sandpiper. *Pelidna alpina sakhalina.* Rare migrant. My only record was made on May 26, 1927. On this date four were seen on the shores of a small pond in a plowed field on the Pierce farm. The birds were studied at a distance of only twenty feet. They

were very tame, taking wing only when I came too near or moved suddenly.

*Semipalmated Sandpiper. *Ereunetes pusillus.* Mrs. Bordner gives me one record: May 13, 1917, several seen on the Wapsipinicon River near Independence.

Greater Yellow-legs. *Totanus melanoleucus.* Fairly regular migrant, appearing in April and remaining often until the middle of May. Seen in flocks of a few birds and up to as many as twenty-five, and is often with *Totanus flavipes.* My first fall record is July 31; I have August dates, but none to indicate when it leaves in the fall.

Yellow-legs. *Totanus flavipes.* Fairly regular migrant, usually seen in larger numbers than the last species. My earliest spring date is April 10; earliest fall date, July 31, and latest, August 22. On July 31, 1926, I saw a flock of over 500 Yellow-legs on the wet ground bordering Buffalo Creek on the Pierce farm. I heard a very loud chorous of their whistles early in the morning before arising; I went out and found the largest flock of Yellow-legs that I have ever seen. That year we had an unusually wet summer and fall, and all the low pastures lying along the creek were flooded. In these pastures the Yellow-legs were holding high carnival.

Solitary Sandpiper. *Tringa solitaria solitaria.* Fairly common migrant. It is seen regularly, but seldom are more than two or three seen at a time. Spring records, April 25 to May 20. It appears again in late July (23d to 27th) and is usually seen until the first week in October.

Western Willet. *Catoptrophorus semipalmatus inornatus.* I have one record. One was seen at the Independence mill-pond on May 5, 1929. It was feeding with a flock of about 50 Yellow-legs of both species along the shores of one of the ponds. The plumage of this bird was very light gray, almost white, in fact.

Upland Plover. *Bartramia longicauda.* A fairly common summer resident, appearing in April. Its habitat is the meadowland, the region of large sloughs and meadows that fill many of the valleys in the rolling prairies of the county. The Upland Plover seems to be more common in the spring, when it is fond of sailing high in the sky and uttering its melodious whistle.

Spotted Sandpiper. *Actitis macularia.* Summer resident, usually fairly common. It arrives in May and remains until the middle of September. The Spotted Sandpiper is a familiar figure along the streams of the county during the summer months.

BLACK-BELLIED PLOVER. *Squatarola squatarola cynosurae.* My only record was made May 20, 1927, when four of the birds were seen on the shores of a small pond in a plowed field of the Pierce farm. They were studied at considerable length with 8x glass. This appearance of the birds has been completely described by me in a note in *Bird-Lore* (1927, pp. 416-417).

KILLDEER. *Oxyechus vociferus.* Very common summer resident. It arrives very regularly about March 10 and remains until the last of October or the first week of November, depending on the weather. My earliest spring record is February 21, 1930, and my latest fall record is November 19, 1928. The bird is often caught in snowstorms; it flies about, calling cheerfully, even though the ground be covered with snow. It nests commonly in cornfields, placing its nest between the corn-rows or beside a hill of corn in the month of June. When the nest is approached by the farmer with his team and corn-plow, the sitting bird either tries to intimidate the horses or attempts to lead the farmer away with the crippled wing ruse. In the fall Killdeers are seen along small streams in flocks of from twenty to forty birds.

SEMIPALMATED PLOVER. *Charadrius semipalmatus.* I have only a few records for the bird in Buchanan County: May 20, 1927 (one); May 26, 1927 (two); July 31, 1927 (one). I have two records for Black Hawk, the adjoining county, (May 14 and August 21, 1925).

BOB-WHITE. *Colinus virginianus virginianus.* A permanent resident that was once very common but is now barely able to hold its own in numbers. It has been protected since 1917 and is to remain on the list of protected birds for an indefinite period. The severe winters that we quite often have seem to be very hard on these birds. Many of them starve when unable to find sufficient food when there is much snow and cold weather, while others, in a weakened condition, fall easy victims to enemies. Unprincipled hunters frequently shoot them, and there are plenty of stories that the introduced Ring-neck Pheasant is driving them from their accustomed haunts; it is said, and doubtless with truth, that this new aggressor both destroys the Bob-white's nest and kills any of the birds caught unawares. The Bob-white usually winters in sheltered hedges near corn-fields. Here it picks up shelled corn in the fall and eats such weed seeds as it can find along the borders of the field. In very severe weather I have seen a small flock come into the feeding yards on the farm, where they eat with the farm animals and poultry in the manner of domestic birds. Many farmers appreciate the value of Bob-white and like to have the

bird come about the farm buildings. They scatter grain for him and thus provide food when his need for it is greatest. On the Pierce farm there was usually a small flock of Bob-whites that wintered each year.

Ruffed Grouse. *Bonasa umbellus umbellus.* Rare permanent resident. I saw one bird in the heavy woods southeast of Monti on May 6, 1923, but that is my only record for this county. On December 23, 1923, while taking a Christmas census in the Devil's Backbone State Park, Delaware County (about four miles from the Buchanan County line), I found one Ruffed Grouse, but it is rare there also.

Prairie Chicken. *Tympanuchus americanus americanus.* Formerly an abundant permanent resident, but now rare. In past years I would hear it "booming" in the wide region of sloughs that lie a mile or two to the east of the Pierce farm, but at the present time this is a spring sound not often heard. The past abundance of the Prairie Chicken and the history of the hunting and trapping of the bird in this county have been completely described in a paper published in the Wilson Bulletin. (See "The Prairie Chicken in East Central Iowa", Wilson Bulletin, XXXIV, pp. 100-106). In concluding this paper I said: "Covies of from ten to fifty of the birds are common in many regions. Frequent mention of their increase is found in the local presses. Where formerly we found none, we now see them rather regularly, and if present indications are at all prophetic, we shall have large numbers of them with us in the future." My prediction did not bear fruit, and time has shown that this was only a temporary increase that could be noted at the time my paper was written. The Prairie Chicken is protected by law (the protection began in 1917), but no permanent increase in its numbers has resulted. As in the case of the Bob-white, the Ring-necked Pheasant is blamed for the decrease in the numbers of the Prairie Chicken. In February, 1930, I found a flock of fifty-five Prairie Chickens a mile north of Winthrop. It had been a number of years since I had seen a flock of even fair size, and this large flock was a pleasant surprise. I usually see only one or two birds during the year.

Ring-necked Pheasant. *Phasianus colchicus torquatus.* A permanent resident that is increasing quite rapidly in eastern Iowa and promises to become a very plentiful game bird. I do not know when the pheasant first appeared in the county. I first saw it in 1924, but I know it had been here several years before this. Only a few were seen at first, but now rather large flocks are often reported (a dozen to twenty birds). Farmers say the pheasants come into the cattle

feeding yards and eat corn in the winter, then roost in nearby trees at night like a flock of chickens. There is considerable complaint from farmers in this county about the pheasants eating newly planted corn.

*Wild Turkey. *Meleagris gallopavo silvestris.* "Wild Turkeys were in great abundance and were seen in flocks of as many as a hundred, but they have entirely disappeared."—"History of Buchanan County, Iowa, and Its People", by Harry C. and Katharyn J. Chappell, Vol. 1, p. 35.

*Passenger Pigeon. *Ectopistes migratorius.* "Early settlers tell of enormous flocks of wild pigeons that for several years visited this county and then for some strange unaccountable reason failed to return and have never revisited these haunts since and never could be traced. . . . In June, 1858, the sportsmen of Independence were having rare sport shooting them, thousands having congregated in the fields about town, the Cobb pasture just west of Independence being literally alive with them."—"History of Buchanan County, Iowa, and Its People", Vol. 1, p. 35.

Mourning Dove. *Zenaidura macroura carolinensis.* Very common summer resident, arriving in the last week of March or the first week in April and remaining until the last of October. I have one record of it on November 15. The Mourning Dove often nests late in the season; I have found it nesting early in September. On two occasions it has wintered on the Pierce farm. A pair remained through the entire winter of 1920-21 around a corn-fodder stack and in a willow grove back of the farm buildings. Another dove stayed around the feeding yards through December, 1928, or until the 23d of that month, which was the last date on which it was seen.

*Swallow-tailed Kite. *Elanoides forficatus.* "The last recorded observation of this bird in Iowa was made by Mr. J. H. Scott, of Iowa City, on Wapsipinicon River near Independence in August, 1912."—"The Raptorial Birds of Iowa", by Bert Heald Bailey (1918), p. 53.

Marsh Hawk. *Circus hudsonius.* A fairly common summer resident, but rare in winter. I have a number of winter records for the Marsh Hawk, but it is not often seen until March or early April.

Sharp-shinned Hawk. *Accipiter velox.* A fairly common migrant, appearing in the latter part of April. Latest fall record, October 11. This bird nested in the woods along Buffalo Creek on Pierce farm in June, 1920. The nest, a bulky affair of coarse sticks, was in the top of an ash tree, about twenty feet from the ground.

COOPER'S HAWK. *Accipiter cooperi.* A summer resident, but not common at any time.

RED-TAILED HAWK. *Buteo borealis borealis.* A permanent resident, not common at any season.

RED-SHOULDERED HAWK. *Buteo lineatus lineatus.* There are three records for the species in this county: One bird seen by Mrs. Bordner at Independence on September 15, 1918; one seen by Chas. J. Spiker on Quasqueton-Independence road August 14, 1926; and one seen by me at the Independence mill-pond March 9, 1930.

SWAINSON'S HAWK. *Buteo swainsoni.* Fairly common as a migrant. My earliest spring record is April 17. I have numerous summer records for the bird, which indicate that it must nest in this region.

BROAD-WINGED HAWK. *Buteo platypterus.* Seen only as an irregular migrant. On December 23, 1923, while taking a Christmas census with Chas. J. Spiker in Devil's Backbone State Park (in Delaware County near Buchanan), a Broad-winged Hawk was found. This is my only winter record.

ROUGH-LEGGED HAWK. *Archibuteo lagopus sancti-johannis.* Irregular winter visitant, for which I have made the following records: December 23, 1920 (one); January 24, 1926 (two); December 10, 1929 (one); December 23, 1929 (three). It has been seen on other occasions, but I have no records available.

FERRUGINOUS ROUGH-LEGGED HAWK. *Archibuteo ferrugineus.* Rare visitant. I saw one bird of this species on the Pierce farm on March 17 and 19, 1926. I saw another in an open field near Hazelton, April 13, 1930.

GOLDEN EAGLE. *Aquilla chrysaetos.* Very rare visitant. An adult specimen of the Golden Eagle was found in a slough southwest of Lamont in the fall of 1922. It was shot and mounted by a son of Mr. Joe Foffel, of Lamont. The mounted specimen is in the possession of this man, and I examined it on May 19, 1928. The legs of the bird were feathered all the way down to the toes, eliminating any question that it might have been an immature Bald Eagle.

BALD EAGLE. *Haliaeetus leucocephalus leucocephalus.* A rare visitant. My records of the species in Buchanan County are: May 6, 1919 (one, four miles west of Winthrop); September 12, 1920 (two, a mile south of Pierce farm); September 15, 1920 (one, on Pierce farm); May 18, 1924 (one, at Hazelton mill-pond). Mrs. Bordner saw one near Lamont September 22, 1926. It was later shot by a farmer and given to Mr. Bordner who had it mounted.

PIGEON HAWK. *Falco columbarius columbarius.* This bird doubtless appears in the county rather regularly, but I have made only two records. I saw one on November 24, 1926, and another May 13, 1928. Mrs. Bordner records one on October 14, 1922, and another on April 1, 1923.

SPARROW HAWK. *Cerchneis sparveria sparveria.* Fairly common migrant and a summer resident in small numbers. Arrives in the last of March or first of April. I have one winter record; I saw one flying across the pavement four miles west of Winthrop on January 18, 1929. My earliest spring record is March 4.

OSPREY. *Pandion haliaetus carolinensis.* A rather rare migrant. My records for the county are as follows (one bird seen on each date): April 17, 1927; May 1, 1927; May 3, 1927; May 3, 1928; April 28, 1929; April 13, 21, and 26, 1930.[1]

BARN OWL. *Tyto alba pratincola.* A rare visitant. One bird appeared at Pierce farm April 13, 1922, and stayed in the silo all that day. I saw another at a barn in Winthrop August 23, 1929. This owl had been noted by the renter of the barn for a week or more previous to this and it seemed to be making its home there. Soon after this it disappeared and did not return so far as I know.

*LONG-EARED OWL. *Asio wilsonianus.* Very rare resident, one that I have never been able to find within the county, although I have been on the lookout for it ever since I began the study of the birds of Buchanan County. Mrs. R. I. Bordner has been more fortunate than I in seeing the bird. She writes to me under date of December 3, 1926:

"I first found it nesting April 7, 1919, in the cemetery for insane at Independence. It is located south of the Hospital and filled with evergreen trees. Some girls had told me of seeing the Great Horned Owl at that place and suggested we go there; we were fortunate in seeing both owls. The Long-eared was on the nest, and when we tapped on the tree would pop his head over the edge and gaze at us, a most weird spectacle. We went back several days later to show some of the members of our family and repeated the performance, much to their amusement.

[1]In the spring of 1930 I saw the Osprey at the Independence mill-pond on the three dates given above. Although a pair of the birds had been reported there, I saw but one on each occasion. An Independence man shot one of the birds on April 24. As my next record was made on April 26, there was no doubt of there having been two Ospreys at the mill-pond. The dead bird, which proved to be a male, was turned over to me and I had it mounted.

"In 1923, November 17, I was at Independence a few days, and went for a tramp along a little creek on the east edge of town—a place that had been a favorite bird haunt of mine, and by the way the place where I saw the Evening Grosbeaks. It was a gray day, and suddenly before me, on a level with my eyes, was the familiar cat-face of the Long-eared Owl."

Short-eared Owl. *Asio flammeus.* A regular winter resident, which can be found frequenting sloughs and meadowland during the winter. It is occasionally found in small flocks, but it is not common to see more than one or two in one place. My earliest fall record is November 20. I have two very late spring records—May 13, 1924, and May 24, 1925.

Barred Owl. *Strix varia varia.* Permanent resident in heavy timber. The Barred Owl may be almost as common as the Great Horned Owl, but since it is so retiring by day and does not fly from its retreat unless one comes very near, it is not often seen. I usually see it once or twice each year, but some years I have missed it entirely. When one is along the Wapsipinicon River before sunrise the bird is often heard hooting. The notes are much louder than those of the Great Horned Owl and carry a considerable distance if the air is still.

Screech Owl. *Otus asio asio.* Fairly common permanent resident, but owing to its nocturnal habits is not often seen. Its notes, however, are quite often heard and tell of the presence of the bird. A pair of Screech Owls used to nest in a grove of tamaracks and willows on the Pierce farm, and I would often find a row of four or five of their young sitting on a limb among the trees.

Great Horned Owl. *Bubo virginianus virginianus.* Fairly common permanent resident in regions of heavy timber and often found outside of this habitat. One can seldom go into the heavy timber anywhere in the county without hearing a flock of Crows annoying a Great Horned Owl. Often a pair will be found sitting in the same tree, after the Crows have disclosed their presence. A pair nested on or near the Pierce farm for five or six years or longer, but they were both shot by a farmer's boy who happened to find them in 1929. I described their nesting of one season in *Bird-Lore*, XXVI, 1924, pp. 94-96.

Snowy Owl. *Nyctea nyctea.* Very rare winter visitant. My only record is for one shot by a farmer near Lamont November 28, 1926. I saw the dead bird.

YELLOW-BILLED CUCKOO. *Coccyzus americanus americanus.* Common summer resident, arriving in May. This bird is the farmer's "Rain Crow".

BLACK-BILLED CUCKOO. *Coccyzus erythropthalmus.* Summer resident, but much less common than the last.

BELTED KINGFISHER. *Ceryle alcyon alcyon.* Common summer resident. Occasionally winters along open streams. There are few open streams, however, except those fed by springs or having swift water; in mild winters there is considerable open water, but we do not often have mild winters. One kingfisher stayed through the entire winter of 1920-21, along Buffalo Creek on the Pierce farm. One was found along a small stream in Devil's Backbone State Park on December 23, 1923. I found another along the creek at Buffalo Grove January 3, 1929. My earliest spring date is March 16.

HAIRY WOODPECKER. *Dryobates villosus villosus.* Fairly common permanent resident.

DOWNY WOODPECKER. *Dryobates pubescens medianus.* Common permanent resident.

YELLOW-BELLIED SAPSUCKER. *Sphyrapicus varius varius.* A common migrant, appearing early in April and again in late September. Latest fall date, October 12.

RED-HEADED WOODPECKER. *Melanerpes erthrocephalus.* Formerly an abundant summer resident, but now becoming scarce. Many red-heads are killed by automobiles along almost every mile of paved highway. This has been occurring for a number of years and now we notice that the bird is becoming scarce, a circumstance that the automobile has no doubt brought about. The red-head frequently winters in the heavy timber of the county and I have many winter records. My earliest spring record is March 28, but most of the birds come in early May and remain until September.

RED-BELLIED WOODPECKER. *Centurus carolinus.* Permanent resident in heavily timbered regions and sometimes seen outside of this habitat. It can hardly be called a common bird, but it is nearly always to be found in the heavy woods, though in small numbers.

NORTHERN FLICKER. *Colaptes auratus luteus.* An abundant summer resident. It arrives in March and remains until September. Occasionally it winters. I have a few winter records scattered through the years.

WHIP-POOR-WILL. *Antrostomus vociferus vociferus.* A rather scarce summer resident in the woods along the Wapsipinicon, arriving

the last of April or early in May. I often find the bird when tramping through the woods in May and have often heard it calling at night along the river. I once heard two birds along Buffalo Creek, but their presence there is unusual.

NIGHTHAWK. *Chordeiles virginianus virginianus.* A scarce summer resident, arriving about the middle of May and remaining until late September. It is often very common during the fall migration, which begins in late August. During this period flocks containing hundreds are often seen. These flocks are usually strung out across the sky and take many minutes in passing.

CHIMNEY SWIFT. *Chaetura pelagica.* A common summer resident, arriving the last week in April or the first week in May and remaining until September. My latest fall record is September 19.

RUBY-THROATED HUMMINGBIRD. *Archilochus colubris.* A scarce summer resident, arriving in the last half of May and remaining until the middle of September.

KINGBIRD. *Tyrannus tyrannus.* A fairly common summer resident in most parts of the county. It arrives the last week of April or the first week of May and remains until the first week of September.

ARKANSAS KINGBIRD. *Tyrannus verticalis.* Rare visitant. The only one I have seen was found along a roadside near Buffalo Creek on May 15, 1927. This bird perched on a wire fence and was studied at a distance of fifteen feet. It flew off into a plowed field several times, catching insects, but returned each time to the wire near me. Mrs. Bordner has seen the bird three times in the county; on June 2, 1918, she saw one north of Independence; on May 21, 1921, she saw one near Lamont, and on June 4, 1922, another near Lamont.

CRESTED FLYCATCHER. *Myiarchus crinitus.* Fairly common summer resident, arriving in the early part of May and remaining until September.

PHOEBE. *Sayornis phoebe.* Formerly a common summer resident, but in recent years, when old-fashioned wooden bridges have been rapidly replaced by concrete structures, the numbers of the bird are diminishing in proportion. The species seems to have found no substitute for the wooden bridge nesting place. It arrives regularly from the 21st to the 27th of March and often remains as late as October 12.

OLIVE-SIDED FLYCATCHER. *Nuttallornis borealis.* A rather rare migrant. I saw one along Buffalo Creek on September 3, 1925. Mrs. Bordner found one August 25, 1918, and another on August 31, 1924, both records in Buchanan County.

Wood Pewee. *Myiochanes virens.* A common summer resident in the woodlands of the county from the middle of May until September. September 14 is my latest fall record.

Yellow-bellied Flycatcher. *Empidonax flaviventris.* I have one positive record. One bird of this species was seen in the Monti woods on June 13, 1928. It was pointed out to me and identified by Chas. J. Spiker.

Traill's Flycatcher. *Empidonax trailli trailli.* A fairly common migrant appearing in the second and third weeks of May.

Least Flycatcher. *Empidonax minimus.* The little Chebec is a fairly regular migrant and is usually rather common in its migrations during May.

Prairie Horned Lark. *Otocoris alpestris praticola.* Permanent resident. Much less common during the winter months. I always think of the Prairie Horned Lark as a spring bird, for it is more or less migratory and early in February it appears in flocks, some of which are quite large. It is then, too, that the bird begins its singing, which is done while it mounts high into the sky. This habit is continued through the spring months and I have hundreds of times watched the bird give its aerial demonstrations. After the performance the lark closes its wings and from a great height drops to the earth like a stone, opening its wings when the descent is almost finished and alighting gracefully on the ground or on a convenient perch.

Blue Jay. *Cyanocitta cristata cristata.* A permanent resident that is abundant during the spring and summer and is fairly common in the wooded regions during the winter. The species is migratory to a considerable extent and becomes very common during the spring migration. In late September large flocks are sometimes seen proceeding southward. I have seen as many as 200 in such a flock.

Crow. *Corvus brachyrhynchos brachyrhynchos.* Common permanent resident. Crows are quite gregarious and flocks of some size are frequently seen. The largest flock I have ever seen contained about 300; the birds were assembled in a cornfield (December 23, 1920). I know of no large Crow "roosts" within the county. Crows nest commonly wherever there are groves or tracts of natural woodland of fair size.

Bobolink. *Dolichonyx oryzivorus.* Common summer resident, arriving the first week in May and remaining until September. Latest fall date, September 17.

Cowbird. *Molothrus ater ater.* Very common summer resident, arriving early in April. My latest fall record is September 3.

YELLOW-HEADED BLACKBIRD. *Xanthocephalus xanthocephalus.* This species formerly nested at the Independence mill-pond and doubtless a few pairs still do, but at present the bird does not appear in very large numbers, usually small flocks of from a half dozen to fifteen being the extent of the number seen. These I find each year at the Independence mill-pond during the month of May. On one occasion I saw one near Buffalo Creek on the Pierce farm. There are large areas of marsh land and reedy ponds at Independence, so of course this is where the yellow-head is always found.

RED-WINGED BLACKBIRD. *Agelaius phoeniceus phoeniceus.* Common summer resident wherever there is suitable nesting ground for the bird. It appears about the second week of March and is often seen as late as November. On January 12, 1928, I saw a flock of fourteen. The appearance of the birds at that time was, of course, very unusual, but it was during a spell of warm, spring-like weather, a typical "January thaw", and this was doubtless responsible for their venturing north. The red-wing nests in the marsh, as a rule, but I have found its nest in an oatfield. One nest, which was woven into the oat-stalks, contained young at the time of harvesting the crop. The oat-binder nipped off the stalks supporting the nest and the young birds narrowly escaped destruction.

MEADOWLARK. *Sturnella magna magna.* Abundant summer resident, arriving regularly about March 12 and remaining until early October. Wintering Meadowlarks are occasionally reported, but I have only one winter record for the bird. I saw one December 4, 1929.

WESTERN MEADOWLARK. *Sturnella neglecta.* Common summer resident, arriving at about the same time as the eastern form.

ORCHARD ORIOLE. *Icterus spurius.* Anderson, in his "Birds of Iowa", says the Orchard Oriole is a "common summer resident in all parts of Iowa." I have found the bird to be rare in Buchanan County. During the period of my bird study in the county, I have had only these few records (one bird seen in each case): June 13, 1917; June 10, 1918; May 17, 1924.

BALTIMORE ORIOLE. *Icterus galbula.* Common summer resident, arriving about the second week of May and remaining until the first week of September.

RUSTY BLACKBIRD. *Euphagus carolinus.* An abundant migrant, arriving early in March and remaining common until April in the spring migration; in the fall is usually common until late November, although the bulk of the birds have passed before that. A straggler is occasionally seen in the winter.

Bronzed Grackle. *Quiscalus quiscula aeneus.* An abundant migrant and summer resident. It assembles in flocks of thousands in August before migrating and arrives in large flocks as well. It is common from early March until the last of October, and a straggler or two may occasionally be found in the winter.

*Evening Grosbeak. *Hesperiphona vespertina vespertina.* Rare visitant. Mrs. Bordner saw two along a small brook at the eastern edge of Independence on February 16, 1919.

Purple Finch. *Carpodacus purpureus purpureus.* A regular migrant in spring and fall, but rare during winter. It arrives in April, leaves in May, and returns in late September and during October. I have two winter records: A flock of ten seen December 23, 1923, in Devil's Backbone State Park, Delaware County, and a flock of ten seen January 31, 1924, in Buchanan County.

Crossbill. *Loxia curvirostra minor.* A rare visitant. The bird has visited the county only once to my knowledge. During April, 1923, there was a large incursion of the Crossbill into the county, and it was reported as rather common in many places, including the city of Independence. The birds that I saw were on the Pierce farm. A flock of about twenty-five stayed in our tamarack grove from April 4 to April 22, 1923. A small flock of Redpolls were also in the grove at about this time. This occurrence of the Crossbills and Redpolls has been quite fully described in the Wilson Bulletin, XXXV, 1923, pp. 157-159.

Redpoll. *Acanthis linaria linaria.* Rare visitant. A flock of ten visited the tamarack grove on the Pierce farm between March 16 and April 10, 1923. On some days only two or three birds could be found there, but the entire flock was often present. See note on Redpolls under last species.

Goldfinch. *Astragalinus tristis tristis.* Permanent resident, abundant in spring and summer, but rather scarce during the winter. Goldfinches are usually seen in small flocks. They gather in some tree in the spring months and give concerts which are very pleasing to the listener.

Pine Siskin. *Spinus pinus.* Scarce winter visitant. I saw one in Devil's Backbone State Park, Delaware County, December 23, 1923. A flock of seven stayed in the heavy shelter-belt of pine, birch, and spruce at the northern edge of the State Hospital grounds at Independence during December, 1929 (I saw them on the 17th and 23d of the month), and as they appeared there at different times during

January and February, 1930, it seems probable that they spent most of the winter at that place.

Snow Bunting. *Plectrophenax nivalis nivalis.* Rare winter visitant. A flock of about 200 appeared near Winthrop and remained a week or more during January, 1927. During the latter part of January, 1930, flocks totaling at least 200 appeared. I saw them along the road between Independence and Waterloo.

Lapland Longspur. *Calcarius lapponicus lapponicus.* A rather scarce winter resident, but always very common in the fall. Beginning in early November it appears in flocks containing hundreds, even thousands, of longspurs, which move restlessly about the country. By December these flocks seem to have disappeared and only a few birds will be seen or heard during winter.

English Sparrow. *Passer domesticus domesticus.* Abundant permanent resident in towns and at every group of farm buildings. It seldom nests in the open country and is nearly always found about buildings of some sort.

Vesper Sparrow. *Pooecetes gramineus gramineus.* Common summer resident, arriving the first or second week of April and remaining until October. My earliest spring record is March 20, and my latest fall record is November 25.

Savannah Sparrow. *Passerculus sandwichensis savanna.* A scarce migrant, one that I have seen but a few times. Very careful search for it would doubtless reveal many individuals during migrations, but lack of time has often prevented my making a lengthy search at the proper season.

Grasshopper Sparrow. *Ammodramus savannarum australis.* A fairly common summer resident, arriving in the latter part of April or early May.

Leconte's Sparrow. *Passerherbulus lecontei.* This species may be fairly common in migration, but owing to its habit of hiding in grass and high weeds in sloughs and meadows I can only rarely find it. I have never seen it in the spring. My latest fall record is October 21.

Lark Sparrow. *Chondestes grammacus grammacus.* Along the Cedar River near Waterloo in Black Hawk County, the Lark Sparrow is fairly common and seems to be a summer resident, but I see it very irregularly in Buchanan County and then only as a spring migrant.

Harris's Sparrow. *Zonotrichia querula.* A fairly regular migrant in spring and fall. There have been only a few years that I did not find it at all. It appears in May and October.

WHITE-CROWNED SPARROW. *Zonotrichia leucophrys leucophrys.* Very scarce migrant. I have only a few records, all of these during the month of May.

WHITE-THROATED SPARROW. *Zonotrichia albicollis.* Common spring and fall migrant, appearing from the first week of April to the end of the month and remaining until the middle of May in some years. In the fall migration I have noted it from September 27 to October 19.

TREE SPARROW. *Spizella monticola monticola.* Common winter resident, from the last of October and early November until April. Latest spring date, April 25.

CHIPPING SPARROW. *Spizella passerina passerina.* Scarce summer resident. It arrives from April 7 to April 22.

FIELD SPARROW. *Spizella pusilla pusilla.* Common summer resident in regions where the timber has been cut off and the land has grown up to hazel-brush and hawthorn bushes. Brushy hillsides are also a favorite habitat. It arrives early in April. I have had it as early as March 28, but this is unusual.

SLATE-COLORED JUNCO. *Junco hyemalis hyemalis.* Common winter resident. It arrives in October and remains until the middle of April. It is always very abundant from the middle of March until the first week of April. I have seen it as early as September 27 and as late as May 1.

SONG SPARROW. *Melospiza melodia melodia.* Abundant summer resident, arriving about March 17 and remaining until the middle of October. My earliest spring record is March 10; latest fall record, November 1.

LINCOLN'S SPARROW. *Melospiza lincolni lincolni.* Seen only as a migrant, but it is so shy I do not often see it. Earliest spring record, April 27.

SWAMP SPARROW. *Melospiza georgiana.* Common migrant. In the spring migration I have seen it from April 6 to May 23, and in the fall from October 10 to October 17.

FOX SPARROW. *Passerella iliaca iliaca.* Common migrant. In the spring migration I have records from March 28 to April 15, and in the fall from October 6 to October 19.

TOWHEE. *Pipilo erythrophthalmus erythrophthalmus.* The Towhee is a common migrant, but appears to be a rather scarce summer resident in the timber along the Wapsipinicon. It arrives in late April or early May, though I have seen it as early as April 10. My latest fall record is October 21. I found one nest of the Towhee on a high

wooded bluff overlooking the Wapsipinicon on June 5, 1927. The nest contained four eggs and the bird was evidently incubating at that time.

CARDINAL. *Cardinalis cardinalis cardinalis.* Fairly common permanent resident in the timbered regions. It does not often appear outside of the timber during the winter, except for occasional visits to feeding stations maintained for birds in towns and in other places.

ROSE-BREASTED GROSBEAK. *Hedymeles ludovicianus.* Rather common summer resident, usually arriving during the second week of May and remaining until early September.

INDIGO BUNTING. *Passerina cyanea.* Common summer resident, arriving about the middle of May and remaining until early September.

DICKCISSEL. *Spiza americana.* Abundant summer resident, arriving in May. The date of arrival is varied. My records for the bird, covering a twelve-year period, shows that in seven years it arrived during the last half of May, while in five years it arrived during the first half of the month. My latest fall record is September 1. It has usually disappeared by August 15.

SCARLET TANAGER. *Piranga erythromelas.* Very scarce summer resident. I quite often see it during the spring migration, but rarely during the summer. My records show the appearance of the bird to be very irregular, for it has been seen only in these years: 1917, 1919, 1920, 1923, 1924, 1926, 1928, 1930.

PURPLE MARTIN. *Progne subis subis.* Common summer resident in towns where houses are provided for the bird. It arrives about the middle of April and departs about the middle of August. I now and then see colonies of martins in the country, about a house that the farmer has provided for them, but such colonies are rare, for not many houses are provided and if such provision is made the house is almost invariably appropriated by English Sparrows which are very hard to evict. I have tried to attract martins to a house in the country for several years, but I had no success at all until 1929, when three pairs were induced to take up housekeeping on my place.

CLIFF SWALLOW. *Petrochelidon lunifrons lunifrons.* Scarce summer resident, arriving in May. I more often see Cliff Swallows in the late summer than in spring. Several Cliff Swallows attempted nesting under the eaves of the barn on the Pierce farm several years ago, and got as far as building their nest, but they were driven out by English Sparrows and did not return.

BARN SWALLOW. *Hirundo erythrogastra.* Abundant summer resident, arriving in the last week of April and remaining until early September. My latest fall record is September 20.

TREE SWALLOW. *Iridoprocne bicolor.* Common migrant in spring, flocks of hundreds often being seen. I have spring dates from April 7 to May 18. Most of the Tree Swallows have passed by early May.

BANK SWALLOW. *Riparia riparia.* Rather common summer resident, arriving in early May. Latest fall record, September 4.

ROUGH-WINGED SWALLOW. *Stelgidopteryx serripennis.* Common summer resident, arriving in the last week of April. It is much more common than the Bank Swallow.

*BOHEMIAN WAXWING. *Bombycilla garrula.* Rare visitant. Mrs. Bordner reports one that came to her garden in Lamont, remaining to eat the berries of asparagus for three days, February 15, 16, 17, 1920.

CEDAR WAXWING. *Bombycilla cedrorum.* A rather irregular visitant, for which I have many records. I have seen flocks varying from one or two birds to as many as twenty-five at various times of the year. I have one record in September, 1925; one record in May and one in August, 1926; four records in September, 1927; one record in June, 1928; one record in February, and one in March, 1929.

NORTHERN SHRIKE. *Lanius borealis.* Rare visitant. One stayed for a time in the Buffalo Creek woods near the Pierce farm during December, 1921; I saw one east of Winthrop on November 13, 1929.

MIGRANT SHRIKE. *Lanius ludovicianus migrans.* Rather common summer resident, arriving in the last two days of March or the first week in April, depending on the nature of the weather. Latest fall record, August 24.

RED-EYED VIREO. *Vireosylva olivacea.* Common summer resident, arriving about the middle of May, as a rule. I have one spring date of May 4.

WARBLING VIREO. *Vireosylva gilva gilva.* Common summer resident, arriving about the middle of May and remaining until the first week of September. I have one spring record made on April 26.

YELLOW-THROATED VIREO. *Lanivireo flavifrons.* Rare migrant. I have the following records: May 13, 1923, five birds seen along the Wapsipinicon River; May 11, 1924; two birds; May 20, 1924, one bird.

BLUE-HEADED VIREO. *Lanivireo solitarius solitarius.* A regular migrant during May, but less often observed in the fall migration. Latest fall record, September 27.

BLACK AND WHITE WARBLER. *Mniotilta varia.* Common migrant during the first week of May and about the first week of September.

PROTHONOTARY WARBLER. *Protonotaria citrea.* Rare. My only record was made on May 16, 1926, when two of the birds were observed in some willows on a sequestered pond near the Wapsipinicon River between Independence and Otterville.

BLUE-WINGED WARBLER. *Vermivora pinus.* A summer resident in the hazel-brush-covered land near the Wapsipinicon and a common migrant. It usually arrives during the second week of May; I have one record of May 4.

GOLDEN-WINGED WARBLER. *Vermivora chrysoptera.* Rare. I have but one record. I saw three in the heavy woods near the Hazleton mill-pond on May 18, 1924.

NASHVILLE WARBLER. *Vermivora ruficapilla ruficapilla.* A scarce migrant that is very hard to find, as a rule.

ORANGE-CROWNED WARBLER. *Vermivora celata celata.* A scarce migrant.

TENNESSEE WARBLER. *Vermivora peregrina.* Fairly common migrant, though there is great variation in the numbers seen from year to year. Earliest spring record, May 11.

NORTHERN PARULA WARBLER. *Compsothlypis americana pusilla.* A rather rare May migrant, for which I have but a few records.

CAPE MAY WARBLER. *Dendroica tigrina.* An irregular migrant, usually appearing after the middle of May, for which I have a few records. I have one record made on May 8.

YELLOW WARBLER. *Dendroica aestiva aestiva.* Common spring migrant, appearing early in May. It breeds in the county in rather small numbers.

*BLACK-THROATED BLUE WARBLER. *Dendroica caerulescens caerulescens.* Rare. Mrs. Bordner gives me one record. She saw one at Independence, May 18, 1915.

MYRTLE WARBLER. *Dendroica coronata.* Abundant migrant, arriving in the last half of April. During the spring migration I have records from April 16 to May 25, and in fall from September 27 to October 26.

MAGNOLIA WARBLER. *Dendroica magnolia.* Common migrant. It is most often seen during the second and third weeks of May. I have seen it as early as May 10 and as late as May 30.

CERULEAN WARBLER. *Dendroica cerulea.* The Cerulean Warbler is probably a regular migrant in the county, but it is very seldom seen because of its shyness. My only record is May 15, 1927, when I found one in the Monti woods. The bird, a male, was in a small tree about eight feet from the ground, and I studied it with an 8x glass. It was

on a cold and cloudy day, which perhaps brought this haunter of the treetops near to the ground.

CHESTNUT-SIDED WARBLER. *Dendroica pensylvanica.* A fairly common migrant, appearing from May 4 to May 25.

BAY-BREASTED WARBLER. *Dendroica castanea.* Quite rare. I have the following records (one seen on each date): May 18, 1921; May 7, 1924; May 20, 1927.

BLACK-POLL WARBLER. *Dendroica striata.* Fairly common spring migrant. My dates of its appearance are from May 13 to May 31.

BLACKBURNIAN WARBLER. *Dendroica fusca.* A regular spring migrant, but usually found in very small numbers. My spring dates are from May 7 to May 30.

BLACK-THROATED GREEN WARBLER. *Dendroica virens.* A rather irregular migrant not seen every year. My spring dates are from May 4 to May 25.

PINE WARBLER. *Dendroica vigorsi vigorsi.* A very irregular and scarce migrant.

PALM WARBLER. *Dendroica palmarum palmarum.* An abundant migrant, appearing the last week of April (April 24 is earliest date) and remaining until the middle of May. My fall dates are from September 16 to October 17.

OVEN-BIRD. *Seiurus aurocapillus.* A rather common summer resident in the timbered sections of the county, arriving from May 7 to May 16.

GRINNELL'S WATER-THRUSH. *Seiurus noveboracensis notabilis.* Common migrant. My spring dates are from May 2 to May 25; fall dates, August 31 to September 18.

LOUISIANA WATER-THRUSH. *Seiurus motacilla.* Rare. I have but one record. I found three at the borders of a small pond near the Wapsipinicon River, upriver from Independence, on May 16, 1926. They were very carefully studied with 8x glass.

CONNECTICUT WARBLER. *Oporornis agilis.* Rare. I found one in the Monti timber on May 15, 1927. It was found in bushy growth and was carefully studied with 8x glass in good light; the white eye-ring was noted. The song I heard was quite similar to the Oven-bird's.

MOURNING WARBLER. *Oporornis philadelphia.* An irregular migrant that I sometimes do not find for two or three years in succession. My spring dates are from May 12 to May 30.

MARYLAND YELLOW-THROAT. *Geothlypis trichas trichas.* Common summer resident, arriving from May 4 to the 12th and remaining until September.

Wilson's Warbler. *Wilsonia pusilla pusilla.* Fairly common migrant. My spring dates are from May 7 to May 25. There have been a few years in which I failed to find the bird.

Canada Warbler. *Wilsonia canadensis.* A regular migrant, but usually found in very small numbers. It arrives in Buchanan County about May 18.

Redstart. *Setophaga ruticilla.* An abundant migrant and a common summer resident. It is found in the summer in nearly all tracts of natural woodland of fair size. It arrives from May 4 to May 16 and remains until September.

Pipit. *Anthus rubescens.* An irregular visitor. My records were nearly all made while I was plowing on the farm. The bird frequents freshly plowed fields and other open country. My records are as follows: May 4, 1920 (2); April 21, 1922 (3); May 1, 1926 (1); May 4, 1926 (6); May 2, 1927 (1); May 12, 1928 (3).

Catbird. *Dumetella carolinensis.* A fairly common summer resident, arriving about the first week in May and remaining until late September and early October. I have one record on April 24. I think the Catbird is slowly retreating as the hedges and brush lands through the county are being cleared away. The Brown Thrasher seems to welcome the society of man and builds its nests near his homes and about his farms, while the Catbird becomes less common and retires into the woodland as man advances.

Brown Thrasher. *Toxostoma rufum.* Common summer resident, arriving in the third and last week of April and remaining until late September. My latest fall record is October 9.

Carolina Wren. *Thryothorus ludovicianus ludovicianus.* Rare. My only record is given below:

"On April 20, 1923, I saw my first Carolina Wren, which, according to Anderson's *Birds of Iowa* (1907, p. 368), is very rare and local in Iowa. The bird I saw was scurrying about in a brush heap near my home. Its extra large size and rusty brown plumage at once distinguished it as a species other than our common House Wren. The white eye line was conspicuous, while the absence of white tail feather tips eliminated the possibility of its being a Bewick's Wren. Its notes were much different from the House Wren's. I saw the bird plainly and in good light."—From "April Notes from Winthrop, Iowa," in the Wilson Bulletin, Vol. XXXV, 1923, p. 157.

Western House Wren. *Troglodytes aedon parkmani.* Abundant summer resident, arriving in the last week of April and the first week in May and remaining until September.

WINTER WREN. *Nannus heimalis heimalis.* A rather scarce migrant. My spring records range from March 25 to April 22; fall records, from September 20 to October 12.

SHORT-BILLED MARSH WREN. *Cistothorus stellaris.* A fairly common summer resident in the sloughs that lie near the Independence mill-pond, but I have only rarely found it at other places in the county. My earliest spring date is May 1, and my latest fall record is September 4, but the bird no doubt remains longer than this.

PRAIRIE MARSH WREN. *Telmatodytes palustris iliacus.* About the middle of May I find a few of these birds at the Independence mill-pond. They nest there in small numbers, but are very seldom seen during the summer.

BROWN CREEPER. *Certhia familiaris americana.* The Brown Creeper is usually a scarce and irregular visitor. Most of my records were made during April. I have a few in March, quite a number in October and December, but I have not found it during January and February. It is seldom that more than two birds are seen at a time.

WHITE-BREASTED NUTHATCH. *Sitta carolinensis carolinensis.* Common permanent resident. It is more conspicuous in the winter, when other birds are scarce.

RED-BREASTED NUTHATCH. *Sitta canadensis.* Rare visitant. I have a number of records, but have never seen more than one bird at a time. The following records are all for Buchanan County: May 12, 1920; May 10, 1924; December 10 and 23, 1929; January 18, 1930.

TUFTED TITMOUSE. *Baeolophus bicolor.* Fairly common permanent resident in timbered sections of the county, but seldom seen outside of this habitat.

CHICKADEE. *Penthestes atricapillus atricapillus.* Common permanent resident.

GOLDEN-CROWNED KINGLET. *Regulus satrapa satrapa.* A common migrant and found irregularly during the winter. It arrives in spring during the first half of April and is seen again in the fall migration in October. I have a number of winter records for the bird. Nearly all of these were made on the grounds of the State Hospital at Independence, where there is a heavy shelter-belt of pine and spruce which seems to be very much to the bird's liking. A small flock was found there during January, 1927. A flock of ten was seen there at different times during December, 1929, and January, 1930, and it was evident that it spent the entire winter in the tract of trees.

RUBY-CROWNED KINGLET. *Regulus calendula calendula.* An abundant migrant in spring and common in the fall. It regularly appears

in the first or second week of April. I have seen them as early as March 28. In the fall migration the dates range from September 27 to October 19.

Blue-gray Gnatcatcher. *Polioptila caerulea caerulea.* Rare. On May 13, 1923, I saw three in the heavy woods along the Wapsipinicon River at "Boise's Bend"; on May 13, 1928, I saw another in the same location.

Mrs. Bordner found a nesting bird in Devil's Backbone State Park, Delaware County, in the summer of 1923. The nest disappeared before she had opportunity for a second visit. A severe storm loosened the bark that held the nest in the tree.

Wood Thrush. *Hylocichla mustelina.* The Wood Thrush breeds within the county in small numbers, I believe, but I see it only as a rather scarce migrant in May. Occasionally I see it in late summer.

Veery. *Hylocichla fuscescens fuscescens.* Rather rare spring migrant, appearing from April 18 until the middle of May.

Gray-cheeked Thrush. *Hylocichla aliciae aliciae.* Fairly common migrant, during the first two weeks of May.

Olive-backed Thrush. *Hylocichla ustulata swainsoni.* Fairly common migrant during the last half of May.

Hermit Thrush. *Hylocichla guttata pallasi.* Fairly common migrant, appearing about April 10. My earliest spring record is March 29; latest fall record, October 9.

Robin. *Planesticus migratorius migratorius.* Abundant summer resident, arriving about the first week in March. Occasionally their arrival is a week or more later if the weather is cold and there are early March snows. I have seen Robins as early as February 22 and 23. I recorded a flock of thirty-five on February 22, 1922. When they arrive in March, they are usually common almost at arrival. The bird remains until early November and I have seen it as late as November 21. Occasionally wintering Robins are reported, but this is unusual in Buchanan County. My only winter record was for two Robins that remained in an apple orchard and berry thicket in Winthrop during December, 1929. One of the birds had an injured wing, though it was able to fly quite well. The two birds were present much of the time during December, but in the last week of the month one of them disappeared. The remaining Robin stayed until January and managed to survive the cold and snows for a time. Food was placed on the ground for it and it ate there almost every day. About the middle of January, after a continued period of unusually cold weather,

the bird disappeared. It might have flown south, but it seems more probable that it was frozen to death or killed by a cat.

BLUEBIRD. *Sialia sialis sialis.* A common migrant, but a very scarce summer resident. It arrives from the first week of March to the third, depending on the weather prevailing in early March. I have frequently seen it in the last week of February. On February 22, 1922, I saw a flock containing thirty or more. My latest fall record is October 26. It was formerly a common summer resident, according to reports of older people. No doubt the English Sparrow's habit of driving it out of nesting places in towns and about farm homes has had much to do with its decline in numbers.

Published papers by the author which bear on the abundance and distribution of certain birds found in Buchanan County are:

"Migration of Ducks and Geese at Winthrop, Iowa." *Bird-Lore*, XXII, 1920, pp. 159-160.

"Buchanan County, Iowa, Birds." *The Oologist*, XXXVIII, 1921, pp. 4-7.

"Scarcity of Nighthawks." *Bird-Lore*, XXIII, 1921, p. 197.

"The Prairie Chicken in East Central Iowa." The WILSON BULLETIN, XXXIV, 1922, pp. 100-106.

"Some Iowa Owl Notes." The WILSON BULLETIN, XXXIV, 1922, pp. 164-166.

"Nighthawk Migration Notes." The WILSON BULLETIN, XXXIV, 1922, pp. 236-237.

"Some Further Iowa Owl Notes." The WILSON BULLETIN, XXXV, 1923, pp. 56-57.

"April Notes from Winthrop, Iowa." The WILSON BULLETIN, XXXV, 1923, pp. 157-159.

"The Great Horned Owls of Buffalo Creek." *Bird-Lore*, XXVI, 1924, pp. 94-96.

"Summer Birds of an Iowa Farmstead." *Bird-Lore*, XXVII, 1925, pp. 315-319.

"Lapland Longspurs at Winthrop, Iowa." *Bird-Lore*, XXIX, 1927, pp. 119-120.

"Black-bellied Plovers in Eastern Iowa." *Bird-Lore*, XXIX, 1927, pp. 416-417.

"Bird-Life at an Iowa Mill-Pond." *Bird-Lore*, XXXI, 1929, pp. 105-107.

"Winter Birds of Northeastern Iowa as Revealed by the Christmas Census." The WILSON BULLETIN. (In Ms.).

WINTHROP, IOWA.

# THE WILSON BULLETIN

Published at Sioux City, Iowa, by the Wilson Ornithological Club.

The present editorial organization is as follows: T. C. Stephens, Editor-in Chief, Sioux City, Iowa; Myron H. Swenk, University of Nebraska, Lincoln, Nebraska; Albert F. Ganier, Nashville, Tennessee; Alfred M. Bailey, Chicago Academy of Sciences, Chicago, Illinois; R. D. Hissong, Sioux City, Iowa.

The subscription price in the United States is $1.50 a year, and 50 cents a number; in all other countries of the International Postal Union the price is $2.00 a year, and 60 cents a number. Subscriptions and orders for single copies should be addressed to the Secretary, Dr. Jesse M. Shaver, Peabody College, Nashville, Tennessee, U. S. A.

## EDITORIAL

After serving for many years as Editor of the *Ibis*, official organ of the British Ornithologists' Union, Dr. W. L. Sclater retires. He is succeeded by Dr. C. B. Ticehurst, of Kent, England.

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The issue of the WILSON BULLETIN for March, 1930, is now practically exhausted. If any of our readers are not accustomed to retain permanently their copies, and would be willing to donate the March issue, they may be sent to the Editor and will be thankfully accepted. We have had a great many calls this year for back numbers, and most of the two hundred new members for the year have asked for back numbers of the year. These two demands were not foreseen, and only the usual number of copies of the March issue were printed. And so we ask our readers to send us only such copies as might otherwise be lost or destroyed.

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MR. E. C. HOFFMAN, of Lakewood, Ohio, is still working on the Starling problem. He finds that this species is continuing to increase and spread rapidly. In Cleveland, for instance, the Starlings began roosting in the Public Square on October 13, 1930, at which time they numbered about 150. On November 8th they had increased to more than five thousand, and the greater number of these were roosting on nearby buildings. At sunset flocks of a thousand or more fly in compact formation high over the roofs of office buildings. Mr. Hoffman is anxious to receive reports from all parts of the country concerning the movements of the Starling this winter, and he may be addressed at 1041 Forest Cliff Drive, Lakewood, Ohio.

THE FIRST AND ONLY TIME we ever visited the American Museum of Natural History must have been about 1896, or thereabouts. We have a vague recollection of an old wooden fence around the premises. We are now profoundly impressed with the scope and development of this institution as briefly sketched in the September-October number of *Natural History*, one of the Museum's periodical publications.

The modern metropolitan museum is not merely a collection of natural history exhibits or sponsor of a course of lectures, but it is an institution of research and exploration—an influential contributor to the store of human knowledge. The present-day art of taxidermy is a wonderful advance over the methods of the past. Most of us have little conception of the skill and variety of the accessory work in the preparation of the exhibits in the modern museum. The best exhibits of today blend art with science—if exact reproduction of natural environment may be called art, and who will deny the artistry of nature? The great collections of study material are important features of the big museums of today. The active educational work carried on in the local community is by no means the least of the museum's functions. Fortunate, indeed, is the school system of a community which supports a modern museum of this kind, where pupils may be taken by classes to observe and study the collections under expert guidance, to profit by the courses of lectures, and to benefit by the inspiration which arises from contact with an intellectual and cultural center. The educational work of the modern museum is also carried on by means of circulating nature study collections, by loan libraries of lantern slides and motion picture films, and by various other extramural aids. The services performed by the public museum in a community are as important as are those of the public library, and probably cost no more in smaller communities. The number of people served by the public museum may be very great. Over twelve millions of school pupils were served by the educational activities of the American Museum during the year of 1929, and this figure does not include the regular adult visitors to the museum exhibits. We have been told that the Field Museum, of Chicago, often entertains five thousand visitors in a single day. Is it not time for many of the communities of the middle west to begin to profit by the examples of the older eastern cities in this public enterprise?

## THE CLEVELAND MEETING

The Seventeenth Annual Meeting of the Wilson Ornithological Club will convene in Cleveland, Ohio, on Monday and Tuesday, December 29 and 30, 1930, in conjunction with the American Association for the Advancement of Science.

The reading of papers will form a prominent feature of the meetings. All members are earnestly requested to contribute and to notify the Secretary as to the titles of their communications, the length of time required for their presentation, and whether they will be illustrated by lantern slides, small films, or standard films. If a definite place on the program is desired, members should so indicate.

Meetings will be held in Room 32, Clark Hall, College for Women, Western Reserve University, from 9.00 A. M. until 5:00 P. M.

The annual banquet of the Wilson Ornithological Club will be held with the Cleveland Bird Club and the Inland Bird Banding Association at a time and place to be determined later.

The attention of all Wilson Club members is called to the meeting of the Inland Bird Banding Association which will meet in Cleveland on Wednesday, December 31. All Wilson Club members are urged to stay over one day and attend this meeting.

At this meeting, the new Constitution and By-Laws will come up for ratification.

The headquarters of the Wilson Club will be at Hotel Hollenden, Superior Avenue at East Sixth Street, where rooms may be secured at the following rates: single room with bath, $3.00 to $6.00; double room, $6.00 to $12.00. Reservation should be made well in advance.

A special railroad rate is made to all members of organizations associated with the American Association for the Advancement of Science. Since the Wilson Ornithological Club is an associated organization, this special rate applies to its members. To secure this special rate, purchase a one-way ticket to Cleveland, Ohio, and secure from the agent a certificate to the annual meeting of the American Association for the Advancement of Science. Do not purchase a ticket without securing this certificate. This certificate must be presented to the proper official at the convention for validation. After validation, the certificate entitles its holder to a return ticket at half the regular rate.

JESSE M. SHAVER, *Secretary.*

George Peabody College for Teachers, Nashville, Tennessee, October 28, 1930.

# GENERAL NOTES

**Conducted by M. H. Swenk**

**A Partial Albino Junco.**—On April 18, 1930, I took in a trap a junco which appeared quite different from usual. Upon careful examination, it seemed to be an ordinary Slate-colored Junco (*Junco hyemalis hyemalis*) showing partial albinism. Two large white spots under the eyes were connected by a line extending over the bill, and the throat was white. The bird was banded No. C21839 and released. Albino juncos must be rather common, though I have had none before in banding some 700 of them, nor do I recall seeing any in the field.—O. A. Stevens, *Fargo, N. Dak.*

**A Starling Killed by Lightning.**—During a severe electrical storm on September 14, 1930, a large elm at Peterboro, N. Y., was splintered by lightning. Following the storm an adult Starling (*Sturnus vulgaris*), which apparently had taken refuge in the tree and became a victim of the bolt, was found under the tree. The bird's belly was ripped open so that the intestines protruded. I have never before heard of a bird being struck by lightning, and think it rather an unusual occurrence.—Chas. J. Spiker, *Canastota, N. Y.*

**Snowy Egrets in Des Moines County, Iowa.**—During August, 1930, a flock of some thirty Snowy Egrets (*Egretta candidissima candidissima*) visited Ray Lake, a small, partly tree-bordered body of water in northeastern Des Moines County, Iowa, normally not deep and at the time conspicuously shallow owing to the prolonged drought. They arrived on August 1, the entire group, apparently, remaining in the immediate locality until August 15, after which their numbers began to decrease. By August 20 all but five had departed, while only one could be found on the 24th, this last individual taking leave three or four days later. The birds were not particularly wary, and frequently permitted quite close approach. There had been no previous record of Snowy Egrets at Ray Lake over a rather careful observation period that included the past ten years.—H. M. Holland, *Galesburg, Ill.*

**The Rose-breasted and Black-headed Grosbeaks Hybridize.**—During the past fifty years the Rose-breasted Grosbeak (*Hedymeles ludovicianus*) has considerably extended its range from the Missouri River region to the westward in Nebraska, along the principal water courses. And, meantime, the Black-headed Grosbeak (*Hedymeles melanocephalus papago*) has been pushing eastward along the same streams. As a result the two species have met, and now occur together along the upper Elkhorn River west of Norfolk, and along the Platte, Little Blue, and Republican Rivers, between the 98th and 99th meridians, as well as in some of the wooded intervening territory. That these two species sometimes hybridize where they thus meet on the same ground, is shown by two adult male specimens taken at Inland, Clay County, by A. M. Brooking, the first one on May 18, 1920, and the second one on May 24, 1923. Both have the normal plumage of the adult male Rose-breasted Grosbeak, except that the chest and breast are buffy cinnamon, this diluting the normally rose red chest patch to a dull buffy red, and extending below it across the breast as a broad, pure buffy cinnamon band. The areas on the rump and upper tail coverts that are white in the Rose-breasted Grosbeak are pale buffy in the hybrid birds.—Myron H. Swenk, *Lincoln, Neb.*

**Peripheral Lag in Migration.**—It seems to me that this term, suggested by Professor Swenk (Wilson Bulletin, XLII, p. 93) may be given slightly different interpretation. Near the border of a migration area individuals of the particular species are few, and are most likely to be seen only during the main period of movement. In the main path the numbers are large and early birds are more commonly seen. Thus it is partly a matter of observation. The difference is increased by the fact that most of the records come from casual rather than intensive observation. Comparison of dates for the less common species is generally unsatisfactory. By the same reasoning the date of departure also should be earlier near the border. The data for these are still less complete. Systematic trapping over a period of years will yield figures which can be compared to much better advantage.—O. A. Stevens, *Fargo, N. Dak.*

**An Odd Nesting Site of the Bluebird.**—In April, 1929, I had an odd experience with some Bluebirds (*Sialia sialis sialis*) that had chosen a hole in an iron post in the city cemetery for their nest. Desiring to band the young birds, I tried to get my hand into the opening but had no success. I could just feel the nestlings with the tips of two fingers. Finally I thought of some ice-tea spoons that were small and long enough to reach under the nestlings, and smooth enough not to hurt them. With one of these I lifted out the five baby Bluebirds one after another, and banded them, afterward replacing them in the nest. The parents sat on nearby tombstones, not much disturbed by the operation, as the accompanying photograph shows. Two days after I had banded them the young Bluebirds were out and flying around.—Mrs. Jack Hagar, *Corsicana, Texas.*

**Upland Plover in Calhoun County, Michigan.**—Two bird lovers, Mrs. L. C. Nielson and Mrs. Peterson, reported finding the Upland Plover (*Bartramia longicauda*) only a short distance from Battle Creek during the latter part of June, 1930. On July 1, we visited the locality where they had made the observation but were rather disappointed at first in that the birds could not be found. We were almost ready to leave when a bird was seen to alight upon a fence post, raising his wings as he did so, then folding them carefully against his sides. We left the car immediately and watched him several minutes through our binoculars, easily noting the pigeon-shaped head and other characteristics of the Bartramian Sandpiper. Soon we moved closer and at the same time flushed two more birds from the meadow about which the fence bordered. Their plaintive tree-toad-like call was uttered many times as they hovered about the pasture. While they had apparently been in the neighborhood for some time, this was the last time that they were observed, but we are of the opinion that they nested in this same region. —Lawrence. H. Walkinshaw, *Battle Creek, Mich.*

**American Egret and Little Blue Heron in the Lake Michigan Dunes of Indiana.**—On the afternoon of August 21, 1930, Mr. Coffin and I drove with Dr. Lewy in quest of some white birds that he had seen the previous Sunday, August 17, and was strongly inclined to think were American Egrets. Our first stop was a marsh concealed by low dunes, shortly before reaching the suburbs of Gary. Here we saw one bird in company with a Green Heron, which was much smaller. We were close enough to be sure it was an American Egret (*Casmerodius egretta*), noting the pale iris, the yellow before the eye, and the deep yellow bill quite plainly before it flew.

The next stop was at Long Lake, north of the high bridge over the lake about half way between Millers and Dune Park. Just as we arrived a passing train startled a flock of twenty-three herons into flight; some of these returned later and were quite evidently the white phase of the Little Blue Heron (*Florida caerulea*). They fed in the marshy part of the lake with three Green Herons not far away.

In the more open water stood four of the larger American Egrets, their slender bodies and graceful necks reflected in the water. Here again were two Great Blue Herons which afforded satisfactory opportunity for comparing size and form. Some of these birds were still in Long Lake on Sunday, August 31.

Dr. Amos Butler writes he has received reports of these birds in the counties of Newton, Allen, and St. Joseph, Indiana.—Mrs. Lucy Baxter Coffin, *Chicago, Ill.*

**A Robin Roost Close to a House.**—Near my house, in fact just outside my sun porch, is a Robin roost, the development of which I may describe as follows. Fifteen years ago, when we built our home, I had the grounds landscaped with special reference to attracting birds. I had sumac, high-bush cranberry, panicled dog-wood, sheep-berry, and buckthorn (*Rhammus cathartica*) planted near the house. Desiring a natural growth, I let these shrubs grow at will. The buckthorn grew very thick and tall. I noticed early in the spring that the Robins ate the small black berries, and also were fond of the sumac seeds. Then I found that a number seemed to sleep in the buckthorn. But not until three years ago (1928) did I pay any special attention to them. At that time, upon returning from a summer in Europe, I found a flock of blackbirds preempting the Robins' sleeping quarters, much to the latter's distress, and I realized for the first time how many Robins were interested. So I went out for several nights and drove the blackbirds away. They objected, but finally they left for other quarters. It is impossible to count the Robins as they fly in and out so much, but that year I estimated at least twenty-five of them slept there. Next year (1929) the very first Robins came to the same place in larger numbers. A Cardinal that feeds here all winter had decided to sleep in the buckthorn, but the Robins would not let him stay. This year (1930) I claimed to have fifty or sixty Robins in my roost, but others have thought that there must be over a hundred of them. It is an interesting sight, and in the spring their vespers are delightful, while mornings they are much more musical than an alarm clock, although a trifle too early. As soon as the young are old enough they all come here, and the bushes seem alive with them. These bushes are very leafy with small branches, which I imagine discourages owls or cats.—Mrs. J. Frederick Clarke, *Fairfield, Iowa.*

**Unusual Nesting Sites of the Prothonotary Warbler.**—The Prothonotary Warbler (*Protonotaria citrea*) is a rare species at any season near Toledo, so when a newly found friend and a beginner in bird study, Kenneth Byers, told me of a nesting pair, I determined to investigate. What made his report doubly interesting was the statement that the birds were nesting in a paper sack!

Mr. Byers' father is a fisherman, and has his home in Lucas County, near the Ottawa County line at the point where Crane Creek enters Lake Erie. Among other buildings are two large sheds for the storage and repair of nets. In one of these a small paper sack, partly filled with staples, had been left carelessly on a beam near an open window, and this the warblers had chosen as a home. When I visited the place on June 16 the sack contained five fledglings.

My friend then took me to the other shed and showed me the nest of last year—a coffee can also partly filled with staples. In the two preceding years a cheese box and a lard pail had been utilized. It was reasonable to suppose that the same individuals returned each year.

Then I led a search along the adjoining marsh for more Prothonotary Warblers. Arriving at a place where many tall stubs of water-killed willows stood in the marsh, we heard the bird's loud song and in a short time had located three more pairs. Only one nest was found, in a hole drilled by a woodpecker in one of the stumps.

I wonder what opinion these warblers held of the pair which turned up their noses (figuratively, of course) at the usual nesting sites, and insisted on living in man-made homes.—Louis W. Campbell, *Toledo, Ohio.*

**Abundance of the Golden Plover in Ohio in 1930.**—I learned of more Golden Plovers in the spring of 1930 than in any previous year. In Wood County, which is south of Toledo, there were more than in the counties to the east, due no doubt to the richer soil and the fact that much more of it was being plowed for corn at the time of the plover migration. At Sandusky in Erie County, where many of my former pupils are still living, I was unable to learn of a single Golden Plover, either by correspondence or by inserting a request for information in a local paper. South of Cleveland two Golden Plovers were seen on May 17 by one of my former pupils, who would have seen others if they had been numerous and widely distributed in that region.

The number of Golden Plovers actually seen by myself and by those who made reports to me in a restricted area, none of which lies more than thirty miles from Bowling Green, is about 3,000, if we omit what are likely to be duplications and accept the lower estimates made by those reporting. In Hancock County, to the south, much of it lying within thirty miles of Bowling Green, P. H. Ballard, Civil Engineer at Findlay, the County seat, believes that there were several thousand Golden Plovers this spring. One of my pupils saw about 400 at one time in that county, seven miles north of Findlay. It is quite possible that many of these plovers that were observed in Hancock County were reported to me by those who saw them later farther north, but it is unlikely that the 3,000 reported from the eastern half of Wood and Lucas Counties, and the adjacent part of Ottawa County, were half of all that stopped to feed in this small region. The largest number reported by one observer was about 1,200, these constituting over half of a flock estimated at about 2,000 shore birds, seen April 23, about 5:30 P. M., about a mile and a half or two miles east of Bono, which is only a

few miles south of Lake Erie. The remainder of the flock was composed of Pectoral Sandpipers, Yellowlegs, and a few Upland Plovers. The observer was Roger Conant, Curator of Reptiles, Toledo Zoological Society. Several others reported seeing flocks of 200 or more. A number of the flocks were seen repeatedly at or near the same place for a week or more.

In 1930 the first Golden Plovers were seen unusually early, March 16, south of the Little Cedar Point marsh, Lucas County, by Louis Campbell, who saw fifty on April 6, and again on April 12 and 19, several miles to the southeast, near Bono. These places are only a few miles from Lake Erie. On April 26, near Genoa, about twelve miles from the Lake, Prof. William P. Holt, saw a flock in which he estimated there were two or three hundred plovers. Large numbers of Golden Plovers were seen in Hancock County, April 19 and 20 and later, and in Wood County from about April 22 until May 8. Flocks of about fifteen were seen May 10 and 11; after that none in Wood County and only three birds reported from other counties.—E. L. Moseley, *Bowling Green, Ohio.*

**The Cardinal's Love for Home.**—A little girl neighbor of mine, who is a great lover of birds, confided to me a few weeks ago that she had a "Redbird" nest and wanted me to see how "cute" it was. Warning her of the danger of visiting her neighbors too often, I accompanied her to the orchard, where the nest was cunningly placed in the fork of a low limb of an apple tree. Taking up an unobtrusive position where we could watch, we soon saw the mother bird go to the nest. She proved to be a Cardinal (*Richmondena cardinalis*).

A few days later the child, forgetting my warning, took her chum and proudly exhibited her bird treasures to her. The chum, being a very ordinary sort, later slipped away from the house, and, taking a long pole, proceeded to punch the nest so that she could see the little birds. She was caught in the act by the birds' guardian, and a bit of scratching and hair pulling ensued. The distressed child procured some strips of cloth, and, punching holes in the sides of the nest, tied it as nearly in its former position as she could, replacing the little birds in their home. One of the young birds was killed when the nest fell. The parent birds, who had been wildly proclaiming their distress, inspected the nest and decided that it would do, and returned to their routine of living.

A pair of Cardinals very early the past spring set up housekeeping in a haw tree in the back yard of Mr. and Mrs. N., which was on the bank of the Cumberland River. Mr. N. was very much interested in the affairs of the tenants of his tree, and daily watched the family life of the Cardinals. When the little Cardinals arrived he watched the comings and goings with renewed interest, especially in the early evening hours upon his return from business. When the young were several days old, on a very chilly evening, he heard a commotion in the vicinity of the haw tree, and, hurriedly investigating, discovered an owl in pursuit of the mother bird, who betook herself to other and safer ground. Mr. N. watched for the return of the mother, but as dark settled and the chill increased the little Cardinals set up a plaintive chatter, and after dark he decided that the owl had made its supper on the mother bird and that her babies would die of exposure. Removing the nest from the tree he carried it into the living room, and warming a woolen sweater deposited the family in their nest on it. He then secured some cotton, and after warming it placed it in the nest, so that the desolated family were once more happy in the warmth.

At dawn the next morning the distressed cries of the parents of the little birds awoke Mr. N. He at once carried the family to their former location. Flying to the nest the old birds inspected it and seeing the cotton which Mr. N. forgot to remove, they proceeded to pull it out by the mouthful, carry it to the outside of the branches, and drop it on the ground. After the nest was cleared the female took up her place of house-mother and went about her family duties the rest of the day as if nothing had happened.

Now comes the strange part of this story. The next evening the owl again attacked the mother bird, who again left her family to the mercies of her landlord and took herself to safer quarters. The little birds were again cared for through the night and replaced in the tree at the call of the mother bird at dawn. This performance was repeated for five nights, when Mr. N. became tired of acting nurse to his Cardinal tenants and decided to place a piece of poultry netting over the tree to protect the birds. The family accepted the protection and the mother continued to rear her family, seeming to know they were safe from the "winged wildcat".

Certainly fixedness of purpose seems characteristic of the mother Cardinal when it comes to sticking to the home, despite all interference in family affairs from outside sources.—MARGARET STACKER, *Cumberland City, Tenn.*

**Behavior of Bob-whites Upon the Approach of a Marsh Hawk.**—On March 25, 1930, from 1:30 to 3:00 P. M., at Madison, Wisconsin, west of University Bay, twelve Bob-whites were watched while feeding in and about a number of corn shocks still left in the field from the winter. While the birds were thus occupied, an adult male Marsh Hawk approached, scouting low over the stubble. The Bob-whites apparently did not see the hawk until he was within eighty to a hundred feet from them. Two of them then flushed to a strip of roadside brush some thirty-five yards distant; the other ten ran easily into the openings at the base of the corn shocks. The ten birds displayed no great alarm nor any haste whatever. Their behavior was comparable to that of well-trained school children going through a fire drill.

The Marsh Hawk went methodically about his business without showing any especial designs against the Bob-whites, although his line of flight took him directly over the corn shocks and past the roadside brush in which the first two birds had alighted. Thirteen minutes after the raptor's departure, a single Bob-white flew from a shock to the roadside brush. A minute later, three more ventured out, one of which joined the last bird in the brush. The remaining two in sight, subsequent to a short period of calling, resumed feeding. Twenty-one minutes after the Marsh Hawk had left, the six issued forth from their shock, pecked disinterestedly at miscellaneous material, until all eight flew as a group eighty yards to the edge of a sweet clover patch. The scattered birds drew together when they became ready, the covey bunching up to roost for the night beside the sweet clover.

Mention might be made that a cock Ring-necked Pheasant was also feeding amid the corn shocks, fully exposed, when the Marsh Hawk appeared. The hawk flew within ten feet or less of the pheasant, but did not deviate from his course in the least, nor did the pheasant exhibit uneasiness nor make any effort to conceal himself. He merely continued eating, evidently confident that he was altogether too big game for Marsh Hawks, with which the Marsh Hawk seemingly agreed.

These incidents rather typify the southern Wisconsin observations to date, with respect to Marsh Hawk-upland game relationships. In general, the evidence indicates that the Marsh Hawk is too weak to kill game of appreciable size; i. e., adult pheasants, and that he is ordinarily too slow to catch healthy alert birds like Bob-whites, especially if the latter are well fed and have suitable cover for refuge.

It is particularly significant to note, in this connection, that corn shocks, properly constructed and open at the base, may serve a double purpose in northern conservation or game management by making available both an excellent food and a fair emergency cover at the same time.—PAUL L. ERRINGTON, *Madison, Wis.*

**The Nesting Habits of the Baltimore Oriole.**—Of all our beautiful summer residents the Baltimore Oriole (*Icterus galbula*) is the most handsome. This statement applies to both form and coloration. Migration records covering twelve years show that these birds come to southern Iowa on dates ranging from April 26 to May 6, and that the last of them usually disappear about September 1. Thus they remain with us about four months in each year.

Orioles are most conspicuously useful in their food habits, living as they do, almost exclusively on caterpillars, bugs, beetles, and grasshoppers (nearly all of them harmful species), and merely tasting ripe fruit, such as cherries and mulberries occasionally, in the most dainty manner.

The song of the Baltimore Oriole, though not the most elaborate, is yet quite distinctive and cheerful and is given in short whistled phrases, all day long, even while the singer is searching among the tree tops for its favorite food. When alarmed, however, it utters a rather harsh penetrating "*perk*" and chatters. During the mating season the males are quite gallant and pugnacious. I have observed one of them fighting with his own reflection in an upstairs chamber window, intermittantly for several days, in a fierce combat with a supposed rival. Mrs. Oriole meanwhile was quietly weaving her nest but a short distance away.

This oriole's nesting habits are of especial interest. For the purpose of acquiring more information about the matter I have recently made some careful observations in regard to this phase of their home life. The much traveled street in Sigourney, Iowa, upon which I live, is paved throughout with concrete. I kept nine blocks between my residence and the Legion Park under observation during the season of 1927. There are about six residences to the block fronting upon this street. The street is well provided with shade trees of the following named varieties: soft maple, hard maple, elm, cottonwood, catalpa, ash, boxelder, and some species of evergreens.

The purse-shaped nest of the Baltimore Oriole is a remarkable structure, taking into consideration the materials the bird has to work with and the tools with which she does the work, for it is Mrs. Oriole that usually constructs the nest. She receives no help as a rule from the male at this work, excepting his songs of encouragement and chirps of approval. To make a structure like this, a human being would not only require two hands with ten deft fingers and a darning needle, but also a select lot of materials and plenty of time. Mrs. Oriole hunts and gathers the materials from a thousand places, both far and near. She weaves and quilts her nest without any other tool than her bill. She works as a rule with her head downward while she holds fast with her feet to the twigs above, and she finishes the job in two or three days!

During the season of 1927, there were nine nests of this species in the trees by the side of the street above described, averaging one nest to each block of the street. Although only about one-half of the trees along this street are elms, yet eight of the nine nests were suspended from the elms. The ninth nest was on a soft maple. In elevation they were placed from nine to fifty feet from the ground or pavement. Four were placed directly over the pavement with hundreds of automobiles and other vehicles passing under them daily. Three of the nests were above the sidewalk and the other two between the pavement and the walk. Two of the nests were suspended from ascending limbs of small size. One hung from a horizontal limb the size of a walking cane. The other six were all suspended from the thin swaying, pendant, outer switches of the elms. Some of these were hanging at a distance of twenty-five feet or more from the main stem of the tree. One of the nests was not only situated directly over the center of the pavement but also a distance of only fifty-five feet from a railroad track over which trains pass every few hours both day and night. Whenever the wind blew from westerly points of the compass, this nest was enveloped by great clouds of coal smoke from every passing train. But this did not seem to deter the birds in the least for they were always to be seen near their nest tree during daylight hours, singing and hunting for food,

From the facts as above related we may safely draw the following conclusions: The Baltimore Oriole in this locality prefers the elm among all our native trees for its nesting site. It does not object to the presence of humanity, or their structures or mechanical contrivances near its nest. It appears to prefer to make its home near human habitations, for its nests are rare in the forest and away from human abodes. When, however, the elm is not present or near the place where it wishes to make its home, it will readily adopt some other tree, for in the season of 1926 I noticed a large wide spreading cottonwood standing alone on another street, which had three of these nests upon it.

Observations extending over thirty years lead me to the conclusion that the enemies of this oriole are not very numerous. Because of its wonderful agility and the fact that the nest is usually pretty well concealed and on a very flimsy and unsteady support, the hawks and owls do not molest it much. But on several occasions I have seen the Blue Jay robbing its nest and once I observed a Fox Squirrel taking a young bird out of an oriole's nest, running over the branches of the tree for a short distance, then dropping it to the ground. This was perhaps mostly mischeivousness on the part of the squirrel, for it made no effort to devour the bird. So far as I am able to state none of the nine nests under especial observation during the season of 1927, were robbed. But after all the painstaking work of nest building and the patient brooding and carrying of food for the young performed by the parent birds, all that one of these nests yielded was just an ugly Cowbird.

Thus it is, that in every grand Symphony of Nature there must be at least one discordant note, else it would not be natural. But no one who is acquainted with the facts will deny that among all the beautiful and beneficial summer residents of the northern United States, which so richly earn and deserve our gratitude and admiration, the Baltimore Oriole stands at or very near the head of the list.—F. D. Nauman, *Sigourney, Iowa.*

# ORNITHOLOGICAL LITERATURE

THE ORIGIN OF BIRDS. By Gerhard Heilman. D. Appleton & Co., New York. 1927. Pp. 1-209. Figs. 1-142 and frontispiece (2 in color). Price, $7.50.

This profusely illustrated work is the most recent contribution to the subject of avian ancestry. Part I includes a detailed study of *Archaeopteryx* and *Archaeornis*, especially the latter which the author had opportunity to study directly; and of *Ichthyornis* and *Hesperornis*. The conclusion is that on the basis of the skeleton alone *Archaeornis* is strictly reptilian. Part II is a comparison of avian and reptilian embryology. Part III is a theoretical application of the facts to form a phylogenetic explanation of birds. The final sentence runs thus, "In this way the reptile, through millions of years and innumerable generations, has been changed into a bird." The author's "this way" is far from clear and sufficient to the reviewer, but we know of no better presentation of the data.

We make this tardy reference to this work because the remainders have been acquired by the Union Library Association (118-120 East 25th St., New York) and are being sold at $1.98 postpaid.—T. C. S.

VERTEBRATE NATURAL HISTORY OF A SECTION OF NORTHERN CALIFORNIA THROUGH THE LASSEN PEAK REGION. By Joseph Grinnell, Joseph Dixon, and Jean M. Linsdale. Univ. Calif. Publ. in Zool., Vol. 35, pp. i-v+1-594, figs. 1-181. Price, $6.00.

This extensive report on vertebrate fauna covers a rectangular area lying about east and west across the eastern half of the northern quarter of the state, and including the Lassen Volcanic National Park. Field notes by ten observers and collectors, besides the authors, are used in the report. Again in this instance Miss Annie M. Alexander appears as the patron of the Museum of Vertebrate Zoology, under whose auspices the work was carried out. The text deals with the terrestrial vertebrate fauna, including 11 species of amphibians, 20 species of reptiles, 257 species of birds, and 99 species of mammals. The analysis of habitats as presented in this paper is particularly interesting and helpful. The numerous illustrations are of excellent quality and pleasing to the eye. It is a noteworthy publication.—T. C. S.

THE WOODPECKERS OF OKLAHOMA. By Edward Drane Crabb. Publ. Univ. Okla., Vol. II, No. 3, pp. 105-158, pls. I-IV. 1930. Price, 75 cents.

Fifteen forms of woodpeckers are described as inhabiting Oklahoma, and one additional extirpated form, namely, the Ivory-billed Woodpecker, is listed. Not all of the fifteen woodpeckers discussed are known to nest in Oklahoma, however. It is reported that Red-headed Woodpeckers had been killed by poisoned grain placed to kill prairie dogs. A typographical error credits 100 genera of woodpeckers to North America, instead of 10. Under the topical heading "Description of Species" the author discusses not only the taxonomic characters, but also breeding and feeding habits, behavior, ecology, etc. This report does for the south-central part of the country about what was done for the northwestern corner by Neff's study of the woodpeckers of Oregon. Crabb's paper is issued by the Biological Survey of the State of Oklahoma.—T. C. S.

CALCULATING WATERFOWL ABUNDANCE ON THE BASIS OF BANDING RETURNS. By Frederick C. Lincoln. Circular No. 118, U. S. Dept. Agric., May, 1930. Pp. 1-4. Price, 5 cents.

An attempt is made in this paper to establish a law by which the total population of North American ducks may be estimated. It is assumed that the ratio of the total number of ducks banded in the preceding year (TDB) to the number of the same lot recovered in the following year (TDR) is equal to the ratio of the total number of ducks on the continent in the preceding year (x) to the number of ducks killed in the following year and reported to the game authorities (TDK). In terms of ratio and proportion the proposition may be stated thus:

TDB : TDR :: x : TDK

The three values being known, the fourth value, x, or the total number of ducks on the continent for a given year, may be easily calculated. It is a very clever idea.

The ratio of TDB to TDR has been found to be remarkably constant over a period of years, averaging approximately 12 per cent. In the nature of the case, however, it must remain an assumption that the ratio of x to TDK is the same, since the value of x is unknown. We may grant that the laws of chance operate to control both ratios (TDB : TDR and x : TDK), but there are several well-known interference factors which can not be neglected, viz., 1) lack of control of reports of dead ducks, both banded and unbanded; 2) other mortality causes, such as alkali sickness. 3) disturbance of the breeding areas. Even if we grant that the laws of chance may operate to distribute the error equally in the two ratios, we are still confronted with the possibility that tagging may be done on a large scale in one part of the country, while killing may be done on a large scale in another area affecting a different duck population. Nevertheless, while we think there can be little certainty on any figures of absolute duck population as derived by this method, we do believe it is capable of yielding relative values from year to year, thus indicating fluctuations in the total duck population.—T.C.S.

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CHECK LIST OF THE BIRDS OF TOLEDO, OHIO, AND VICINITY. By Louis W. Campbell. Published by the Toledo Nature Study Society. [1930].

Two hundred and thirty-seven species are listed for the region treated. Mr. Campbell presents the list very modestly, and states that it is published primarily to assist in local study, while, nevertheless, it has been prepared with scrupulous care. Such local lists must be helpful to beginners, and should be encouraged.—T. C. S.

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OBSERVATIONS OF SOME BIRDS OF WYOMING. By Arthur B. Fuller and B. P. Bole, Jr. Sci. Publ. Cleveland Mus. Nat. Hist., Vol. 1, No. 2, pp. 37-80, pls. VII-XVI. 1930.

Three trips into Wyoming, in 1914, 1923, and 1927, furnished the material upon which the report is based. The list contains 122 species, 65 of which are represented by 172 specimens collected. No extensive bulletin on the birds of Wyoming has been produced since Knight's report of 1902 (leaving out of consideration Cary's ecological paper), and all contributions toward a new list must be welcome.—T. C. S.

Occasional Paper No. 3, University of Minnesota Museum of Natural History. 1930.

This pamphlet contains four ornithological papers, viz., "Some changes in the distribution of certain Minnesota birds in the last fifty years", by Thos. S. Roberts; "Breeding of the Connecticut Warbler (*Oporornis agilis*) with special reference to Minnesota", by William Kilgore; "Breeding of Nelson's Sparrow (*Ammospiza nelsoni*) with special reference to Minnesota", by Walter J. Breckenridge; "A hybrid Passerina (*Passerina cyanea*+*Passerina amoena*)", by Walter J. Breckenridge.

Paintings by Mr. Breckenridge of the hybrid and of Nelson's Sparrow are reproduced in color. We cannot avoid thinking that such valuable papers would reach a wider circle of readers, and thus be more generally useful, if published in the regular ornithological periodicals; and yet, conditions in the large institutions seem to encourage independent publication, even though science may not be best served.—T. C. S.

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Bird Papers from the Virgin Islands. By Stuart T. Danforth.

Birds of St. Croix. By Harry A. Beatty. Both reprinted from Journ. Dept. Agric., Porto Rico, Vol. XIV, No. 3, pp. 107-150. July, 1930.

Professor Danforth lists fifty-eight birds and makes comments on their distribution on the various islands of the Virgin group. Mr. Beatty lists eighty-eight birds which are found on the island of St. Croix, and gives various notes. A map of the Virgin Islands is included.—T. C. S.

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English Sparrow Control. By E. R. Kalmbach. Leaflet No. 61, Presumably issued by the Biological Survey, U. S. Dept. Agric. 1930. Pp. 1-8. Price, 5 cents.

This leaflet is a revision, with considerable abbreviation, of Farmers Bulletin No. 493 (1912, 1917, 1922). Information is given for combating the English Sparrow by trapping, poisoning, shooting, and destroying nests.—T. C. S.

The *Indiana Audubon Bulletin* for 1930 is again at hand. The leading article is by Dr. W. S. Blatchley, now one of the Nestors of Indiana. He tells of his observations on the bird life of Indiana of forty and fifty years ago. In these early years he had associations with Dr. David Starr Jordan and Dr. Barton Warren Evermann. Eighteen other short articles, including one by Dr. Amos W. Butler, make up an interesting bulletin of sixty-four pages.

Two numbers of the *Florida Naturalist* (July and October) have reached this desk. Mr. Longstreet gives an account of his work in banding Chimney Swifts. The news is given that the ornithological library of Henry Nehrling was acquired by Rollins College, at Winter Park, Fla. This magazine has been carrying a series of articles on the land and water mollusks of Florida; the writer has found the shell collecting game to be a very fascinating one.

The *Western Nature Study* for April, 1930, is devoted entirely to "Birds". This number makes a very useful teachers' handbook of general information about birds—and will be as useful in other parts of the country as on the Pacific Coast.

The *Wren-Tit* for April contains an interesting short note on the time limits of crouch-concealment in birds. A young Killdeer was observed to remain in a "freeze" state, without sound or movement, for 77.75 minutes. The circumstances surrounding this incident were rather violent and abnormal, but a new line of behavior investigation is here suggested.

Among the local mimeographed publications we record the appearance of the *Migrant*, prepared for the members of the Tennessee Ornithological Society ($1 per year, Geo. B. Woodring, Editor, 1414 Stratton Ave., Nashville). Vol. I, No. 2, for September, 1930, consists of six pages, and contains short articles by R. A. Wilson, Dr. H. S. Vaughn, E. D. McNish, and A. F. Ganier.

Five copies (June, July, August, September, and October) of the *Raven* have come to us. Many migration notes of local interest are presented in the pages. The editor is Dr. J. J. Murray, Lexington, Va. Prof. Ruskin S. Freer is President of the Virginia Society of Ornithology.

We also acknowledge copies of the *Snowy Egret* for June, July, August, September, and October. The mimeograph of printing allows this monthly to have a new cover design for each issue. Local field notes with an occasional longer article fill the pages. It is published by H. A. Olsen and R. E. Olsen, at 1120 East Ann St., Ann Arbor, Mich. $1 per year.

The May-June number of the *Flicker* (Minnesota Bird Club) is at hand, and contains notes on the nesting of the Barred Owl, by Stanley Stein, and of the Great Horned Owl, by Ralph Woolsey; and also a record of the 1930 spring migration dates, Alden Risser.

Inland Bird Banding Notes (Vol. II, Nos. 1 and 2, for March and June) has reached us twice. These pages carry a great deal of current information of particular interest to active banders, and of general interest also to others.

*Nature Notes from Yellowstone National Park* (VII, 1930, for June, July, August, and September) have been received regularly. The Wood Ibis (*Mycteria americana*) is reported as having been seen near Tower Falls in June. This is a second record for this species in the Park. Another item estimates the number of birds on the Molly Islands, as follows: White Pelicans, about 200 adults, 170 young; California Gulls, 400 adults, 250 young; Caspian Terns, about 20. Apparently these colonies are holding their own.

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# DUES FOR 1931

## ANNUAL DUES FOR 1931 ARE NOW PAYABLE

This is the Treasurer's first notice to all members that dues for 1931 are now due and payable to the Treasurer

**Mr. W. M. Rosene,**
**City State Bank,**
**Ogden, Iowa**

You are earnestly requested to remit at your earliest convenience, thus saving postage to the Club, and much time and effort to the Treasurer. A receipt will be returned only if requested.

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The Club values the continued support of every member, and every resignation is received with regret. Considerable financial loss is suffered by the organization in sending the March issue of the Wilson Bulletin to members who are slow in paying dues. While many of these delinquent members pay, a still larger number drop out without a resignation; the Club would probably save money by rigidly removing all delinquent members from the mailing list. Is this desirable?

THE WILSON BULLETIN again extends the season's greetings to its readers. The past year has been a good one for us. Through the efforts of Secretary Shaver and his committee more than two hundred new members have been added to the roll. We have published three issues of the Bulletin of eighty pages each, and one usual issue of sixty-four pages. The last annual meeting, held in Des Moines, was our largest, and we are looking forward to a splendid meeting at Cleveland. We ask for the continued support of all our members, and their aid in securing new members.